

3A97-04

Niukluk River Salmon Counting Tower
Project Summary Report, 1996

by

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Regional Informational Report¹ No. 3A97-04

March 1997

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INTRODUCTION

The Niukluk River is a tributary of the Fish River, which empties into Golovin Bay on the north coast of Norton Sound. The Niukluk River enters the Fish River approximately ten miles above the village of White Mountain (Figure 1). The village of Council is located on the Niukluk River approximately twelve miles from its confluence with the Fish River. There is road access to the Niukluk River at the village of Council. Subsistence and sport fisheries occur on the Niukluk River.

The counting tower was successfully operated in 1995 (Rob 1995). A counting tower on the Niukluk River was operated for approximately three weeks in 1979 (Schaefer, 1979). The project is operated to obtain more timely and accurate escapement information required for the active management of salmon stocks throughout the season and as a means to calibrate the accuracy of aerial surveys on the other components of the Fish River system.

OBJECTIVES

1. Obtain daily and seasonal estimates of the timing and magnitude of the salmon escapement, by species, to the Niukluk River.
2. Estimate the age, sex, and length of chum salmon escapement to the Niukluk and Fish Rivers by sampling subsistence chum salmon harvests and chum salmon carcasses.
3. Obtain daily and seasonal estimates of the timing and magnitude of the Dolly Varden escapement to the Niukluk River.
4. Collect and analyze age, sex and length information from sport fishery harvests of coho salmon and coho salmon carcasses.

METHODS

The Niukluk River tower camp is located approximately 2 miles upstream from the confluence of the Fish and Niukluk Rivers (Figure 1). The tower camp is just upstream of Tom Gray's camp, which is locally known as Mosquito Bar. A letter of understanding from the Council Native Corporation authorizes the tower and weir operation. Permits for the weir were issued by the Alaska Department of Fish & Game (ADF&G), Habitat Division and the Alaska Department of Natural Resources, Division of Land. The camp and tower site is leased for five years on an annual renewal basis from Tom Gray.

Two crewmembers began working in Nome on 17 June, 1996. The first two days were spent inventorying and purchasing equipment and supplies. The equipment and supplies

were trucked to Council, with the assistance of additional personnel from Nome, on 19 June. The boats were prepared for use and loaded up. Two trips were needed to ferry all of the supplies and equipment to the tower site. The site was inventoried and the cook tent was set up. The tent platforms had sustained some minor damage during the spring floods. The crew traveled to White Mountain on 20 June and picked up the newly hired third crewmember.

The river had changed since the previous year. The area in front of the camp now had a smooth bottom and was significantly shallower than the 1995 location of the partial weir and flash panel. For 1996 , the tower, flash panel and partial weir were installed directly in front of the sleeping tent. The counting tower, partial weir and flash panel were installed using the same methods as reported in detail in the 1995 project report (Rob, 1995). The partial weir installation proceeded smoothly and rapidly because three additional crewmembers from Nome provided assistance for one day, 22 June.

A 120 volt lighting system was installed on the tower to illuminate the flash panel during dark periods. These lights were powered by a portable generator. Beginning in early August the lights operated continuously from dusk to dawn.

The ADF&G, Commercial Fisheries Management and Development Division provided operational funding for the Niukluk River counting tower for the period beginning 17 June and ending 4 August. Starting 5 August and ending 20 September ADF&G, Sport Fish Division provided funding. Counting began at noon on 23 June 1996. The crew counted 18 half-hour counts in three six hour shifts each day except Thursdays and Fridays. The first shift ran from 0000 hours to 0530 hours, the second ran from 1200 hours to 1730 hours and the third shift ran from 1800 hours to 2330 hours. On Thursdays the half-hour counts ran for 24 hours in three eight hour shifts. Fridays were the day off.

The counts for each half hour shift were doubled to produce the reported hourly counts for each species. Each day the reported hourly counts were added to produce a daily subtotal. Every day, the daily and cumulative subtotals for each species were relayed to the Nome office by radio.

The expanded counts for this report were calculated using the following methods. The 18 hour counts for Fridays (the day off) were estimated by adding the counts of each hour of the day before (Thursdays) to the counts of each hour of the day following (Saturdays) and dividing the result by two, giving expanded hourly counts for 18 hours of the day off. Next an expansion factor was calculated to compensate for the 6 hours not normally counted. This factor was derived from the weekly 24 hour count by dividing the total count from 0600 hours to 1200 hours during the 24 hour count by the total normal eighteen hour count during the 24 hour count. Then each 18 hour count for the remaining days was expanded to 24 hour counts by applying the expansion factor to the three days before and after each 24 hour count by multiplying each days 18 hour total by the 24 hour expansion factor, and adding that number to the 18 hour count for each day. This expansion was done for all species counted.

The expanded counts for the days missed because of high water and weir washout were linearly interpolated as follows. For a day the normal 18 hour count missed, the count for the missing day was calculated by adding the counts of each hour of the day before the missed period to the counts of each hour of the day following the missed period and dividing the result by two. If two normal 18 hour count days were missed, the count for the two missing days was calculated by adding the counts of each hour of the day before the missed period to the counts of each hour of the day following the missed period and dividing the result by two. If three such days were missed, the count for the middle missing day was calculated by adding the counts of each hour of the day before the missed period to the counts of each hour of the day following the missed period and dividing the result by two; the count for the first missing day was calculated by adding the counts of each hour of the day before the missed period to the calculated counts of each hour of the middle missing day and dividing the result by two; the count for the third missing day was calculated by adding the counts of each hour of the day following the missed period to the counts of each hour of the calculated missing day and dividing the result by two. If four or more days were missed similar methods of linear interpolation were used. Then each 18 hour count was expanded to a 24 hour count by multiplying each days 18 hour total by the nearest 24 hour expansion factor, and adding that number to the 18 hour count for each day.

On most Fridays the crew went to White Mountain to pick up groceries, supplies and mail that were sent from Nome via air. Groceries, supplies and mail were also periodically brought to Council by Nome staff.

Beginning in early July, the crew began visiting subsistence camps and sampling chum salmon for age, length and sex data. The crew stopped at camps where fish were being caught or processed and asked for permission to sample chum salmon. If 40 or less chum salmon were available, then all were sampled. If more than 40 chum salmon were available, then 40 were sampled. Because pink salmon is the preferred subsistence species and this was a year of high pink salmon abundance, there were few subsistence caught chum salmon available for sampling. Chum carcasses began collecting on the weir and sampling of these began on 14 July and continued until 10 September. The data forms and scale cards were sent to the ADF&G Kotzebue office for processing.

Coho salmon sampling occurred during August and September. Crew members established contact with sport fishers and asked for permission to sample catches. Sport fishers also stopped at the tower camp so that the crew could sample their catches. Coho salmon carcasses began to appear on the beaches of the Niukluk River and sampling began on 3 September; coho salmon carcasses were also collected by walking the accessible tributary streams (Bear and Ophir Creeks). All coho salmon obtained by these methods were sampled. The data forms and scale cards were sent to the ADF&G Kotzebue office for processing. The resultant sex, age and length data were sent to the ADF&G Sport Fish Division Area Biologist for analysis. The male and female coho size distributions were compared between the catch and carcass samples using Kolmogorov-

Smirnov two sample tests. If $P>0.05$, then the samples were not considered different and could be combined for size composition estimation. To determine if the two samples could be combined to estimate age composition, the numbers of fish in each age class and sex were compared between the two samples using a two way contingency table with Pearson Chi-square goodness of fit tests. One test compared each age-sex category between the two samples, the next test compared the numbers of fish in each age category (sexes combined) between the two samples, and the last test compared the number of fish in each age category between the two sexes. To determine if the two samples could be combined for the estimation of sex composition, the numbers of fish of each sex were compared between the two samples. The proportions of fish in each age or 25mm length category were estimated as multinomial proportions (Cochran 1997 and Thompson 1987).

RESULTS

Table 1 shows the expanded daily and cumulative totals for each species. All of the counts for the period from 25 July through 3 August are linearly interpolated because the weir washed out.

The reported total hourly counts were: 63,060 chum salmon, 879,872 pink salmon, 226 king salmon, 9,556 coho salmon, and 3,122 Dolly Varden. Tables 7-11 show the hourly counts of each species. The expanded counts were: 80,178 chum salmon, 1,154,765 pink salmon, 243 king salmon, 12,818 coho salmon, and 3,935 Dolly Varden. Tables 2-6 show the expanded hourly counts of each species. Figure 2 shows a graph of the daily cumulative expanded passage of all salmonid species, except pink salmon, counted. Figures 3-12 show graphs of the expanded daily totals and the cumulative daily totals for each species.

Chum and pink salmon and Dolly Varden were observed on 23 June, the first day of counting. King salmon were first observed on 1 July and coho salmon were first observed on 3 July (Table 1). The daily peak count of 5,126 chum salmon occurred on 9 July, the daily peak count of 124,230 pink salmon occurred on 9 July, the daily peak count of 32 king salmon occurred on 6 July, the daily peak count of 1,678 coho salmon occurred on 15 August, the daily peak count of 247 Dolly Varden occurred on 25 August (Table 1).

Most chum salmon returned during the four week period from 1 July through 29 July when 84% passed the tower (Table 1 and Figures 3 and 4). Most pink salmon returned during the three week period from 6 July through 27 July when 89% passed the tower (Table 1 and Figures 5 and 6). Most king salmon returned during the two week period from 2 July through 16 July when 80% passed the tower (Table 1 and Figures 7 and 8). Most coho salmon returned during the four week period from 1 August through 30 August when 90% passed the tower (Table 1 and Figures 9 and 10). There was a small peak of Dolly Varden migration past the counting tower during the ten day period from 6

July to 15 July when 19% passed the tower and a second larger peak from 15 August to 7 September when 69% passed the tower (Table 1 and Figures 11 and 12).

All species counted exhibited a diurnal pattern of migration past the counting tower. The greatest hourly chum salmon migration occurred during the hour from midnight to 0100, when 11% passed the tower. During the six hour period from 2100 through 0200 hours, 54% of the chum salmon passed the tower. During the twelve hour period from 1700 through 0400 hours, 86% of all chum salmon passed the tower. There was a -0.1% downstream migration of chum salmon during the hour from 1200 to 0100 (Table 2 and Figure 13). The greatest hourly pink salmon migration occurred during the hour from 2100 to 2200 hours, when 10% passed the tower. During the six hour period from 1900 through 0100 hours, 57% of the pink salmon passed the tower. During the twelve hour period from 1600 through 0300 hours, 82% of the pink salmon passed the tower. There was a -0.1% downstream migration of pink salmon during the hour from 1200 through 0100 hours (Table 3 and Figure 14). The greatest hourly king salmon migration occurred during the hour from 0100 to 0200, when 19% passed the tower. During the nine hour period from 1700 through 0200 hours 90% of the king salmon passed the tower. There was a -16% downstream migration of king salmon during the six hours from 0600 through 1100 hours (Table 4 and Figure 15). The greatest hourly coho salmon migration occurred during the hour from midnight to 0100, when 21% passed the tower. During the four hour period from 2300 through 0200 hours 62% of the coho salmon passed the tower. During the twelve hour period from 1800 through 0500 hours, 97% of the coho salmon passed the tower. There was a -2.4% downstream migration of coho salmon during the six hour period from 0600 through 1100 hours (Table 5 and Figure 16). The greatest hourly Dolly Varden migration occurred during the hour from 2300 to midnight, when 13% passed the tower. During the four hour period from 2100 through 0000 hours 43% of the Dolly Varden passed the tower. During the twelve hour period from 1800 through 0500 hours, 82% of the Dolly Varden passed the tower (Table 6 and Figure 17).

An aerial survey of the entire Niukluk River counted 9,730 chum salmon on 9 July, 1996. The total season expanded tower count of chum salmon was 80,178. The aerial survey counted 12% of the total season expanded tower count of chum salmon. The aerial survey counted 9,182 chum salmon above the counting tower on 9 July, when the cumulative tower count of chum salmon was 42,679. The aerial survey counted 21.5% of the cumulative tower count on 9 July (Table 1).

A aerial survey count of 153,150 pink salmon was made on 9 July, 1996. The total season expanded tower count of pink salmon was 1,154,765. The aerial survey counted 13% of the total season expanded tower count of pink salmon. The aerial survey counted 121,450 pink salmon above the counting tower on 9 July, when the cumulative tower count of pink salmon was 310,543. The aerial survey counted 39% of the cumulative tower count on 9 July (Table 1).

A aerial survey count of 2,047 coho salmon was made on 3 September, 1996. The total season expanded tower count of coho salmon was 12,818. The aerial survey counted

16% of the total season expanded tower count of coho salmon. The aerial survey counted 1,877 coho salmon above the counting tower on 3 September, when the cumulative tower count of coho salmon was 12,553. The aerial survey counted 15% of the cumulative tower count on 3 September (Table 1).

Readable scales were collected from a total of 418 chum salmon, 55 from subsistence catches and 363 from weir carcasses. The subsistence sample was disregarded because of its small size and partial representation of the whole escapement. Weir carcasses were sampled continuously from the first appearance of carcasses to the end of the project, except for a seven day period when the weir was washed out, and the samples were considered representative of the whole escapement. Three year old chum salmon, age-0.2, from the 1993 brood year contributed 2 fish or <1% of the sample and had an average length of 580 mm. Four year old chum salmon, age-0.3, from the 1992 brood year contributed 119 fish or 33% of the sample and had an average length of 570 mm. Five year old chum salmon, age-0.4, from the 1991 brood year contributed 193 fish or 53% of the sample and had an average length of 595 mm. Six year old fish, age-0.5, from the 1990 brood year contributed 47 fish or 13% of the sample and had an average length of 596 mm. Seven year old fish, age-0.6, from the 1989 brood year contributed 2 fish or <1% of the sample and had an average length of 643 mm. Female chum salmon were 45% of the sample and male chum salmon were 55% of the sample. The average length increased with age and males were larger than females, except for the single three year old male which was larger than the average length of four year old males (Table 12).

The sex and age composition of the chum salmon carcass samples was applied to the total estimated chum salmon escapement, resulting in escapement estimates by age and sex (Table 13).

Readable scales were collected from 202 sport caught coho salmon (Table 14) and 209 coho salmon carcasses (Table 15). Using both sampling methods, length data was collected from a total of 483 coho salmon, 284 males and 199 females. Females ranged from 495 to 675 mm (mid-eye to fork of tail) and males ranged from 435 to 710mm (Table 16). A Kolmogorov-Smirnov two sample test of the cumulative length distributions of females vs males showed that the sexes differed in size distribution, D=0.264, P<0.001, (Figure 18). Kolmogorov-Smirnov two sample tests, by sex, of the cumulative length distributions of the two samples (rod and reel vs carcass) did not detect significant differences among males, D=0.089 and P=0.652, (Figure 19), and did detect differences among females, D=0.215 and P=0.024, (Figure 20). The two samples were combined for length composition estimates of males and separated for length composition estimates of females (Table 16). The length distributions of male and female coho samples are compared in Figure 21. The ages of coho salmon ranged from 1.1 to 3.1 (freshwater years.saltwater years). Fish of ages 1.1, 2.1 and 3.1 were compared among samples and sexes using a series of contingency tables with Chi-square tests. An overall chi square test among age classes by sex between the two samples (carcass and rod and reel) suggested that the age-sex groups were not different between the samples ($\chi^2 = 10.529$, P = 0.062, df = 5). The distributions of the three age classes (sexes combined)

were also compared between the two samples and found not to be different ($\chi^2 = 0.131$, $P = 0.937$, $df = 2$). Therefore the samples were combined and treated as a single group for estimating age composition. The age composition of the coho salmon escapement comprised 9.9% age 1.1, 88.1% age, and <2% age 3.1 (Figure 22). The sex composition of the coho salmon escapement into the Niukluk River could not be estimated. The two samples were compared and found to be different ($\chi^2 = 6.16$, $P = 0.013$, $df = 1$). The rod & reel sample, 123 males and 109 females, was found not to be different from 50/50 ($\chi^2 = 0.423$, $P = 0.516$, $df = 1$) while the carcass sample, 90 females and 161 males, was different from 50/50 ($\chi^2 = 10.227$, $P = 0.001$, $df = 1$). It could not be determined which sample was biased, or in what direction.

Climatological and stream observations are shown in Table 17.

DISCUSSION

A counting tower project ran on the Niukluk River in 1979. That project collected incomplete data from 9 July to 27 July, 1979 (Schaefer, 1979).

The Niukluk River counting tower project ran as a cooperative project with the Kawerak Corporation in 1994. Rains throughout the summer kept water levels high and an early August flood washed out the weir so that no useable data was collected. However, much was accomplished in 1994, the camp infrastructure of tent platforms was built and an appreciation of the difficulties associated with operating on the Niukluk River was gained (Charles Lean, ADF&G, personal communication).

In 1995 the Niukluk River counting tower operated successfully for the first time. Steadily decreasing water levels for most of the season and improved weir equipment were the primary reasons for this success (Rob, 1996).

In 1996, counting began at noon on 23 June, which was six days earlier than in 1995. The estimate of 80 chum and 20 pink salmon by midnight on 23 June indicates that passage likely began a few days earlier (Tables 2 and 3). King and coho salmon passage began well after the tower began operating (Tables 4 and 5).

The run-timing of chum salmon in 1996 was about one week earlier and the magnitude of the 1996 escapement was 9% less than that of 1995 (Figures 23 and 28). The run-timing of the even year pink salmon escapement in 1996 was about one week earlier than in 1995 and the magnitude of the 1996 escapement was far greater than the 1995 odd year escapement (Figures 24 and 29). The run-timing of the first half of the king salmon escapement in 1996 was about one day earlier, the third quarter was about one week earlier, and the last quarter was almost two weeks later than in 1995. The king salmon escapement in 1996 was almost double the size of 1995 (Figures 25 and 30). The run-timing of the coho salmon escapement in 1996 was about one week earlier and the magnitude was 2.7 times greater than in 1995 (Figures 26 and 31). The run-timing and

magnitude of the Dolly Varden passage in 1996 was very different from 1995. From the start of the counting season until 18 August in both years the Dolly Varden passage was similar in timing and the magnitude was about double for 1996. After 18 August the Dolly Varden began migrating downstream in 1995 and by 8 September that year the total tower count was -406. For 1996, after 18 August Dolly Varden passage continued to build and by 8 September the total tower count was 3,859. After 8 September in both years, Dolly Varden migrated upstream until the end of the counting season (Figures 27 and 32).

Difficulties encountered in both years while counting from the tower included species identification problems at the far end of the flash panel during times of poor visibility, severe glare from sunlight in the evening, spawning fish covered portions of the flash panel with gravel, and occasional wind turbulence that made species identification problematic along the length of the flash panel. Counting accuracy decreases when the rate of passage increases and this probably occurred from 6 July through 20 July in 1996 when there were 38 hours when the count of pink salmon exceeded 6,000 fish per hour (Table 8).

After three days of almost continuous rain, the weir washed out at 2 am on 26 July, 1996. Many of the weir pickets had already been removed to create gaps in the weir, but a very rapid rise in water level (Table 14) and a huge number of pink salmon carcasses created enough force to bend the upright steel pipes. It took ten days to remove the weir from the water and to reinstall it again. On 3 August counting resumed, and on the same day the crew size was reduced to two when the crew leader moved to another assignment for three weeks. Counting hours had to be reduced for three days because the crew had to spend most of their time cleaning dead pink salmon from the weir. A new third crewmember arrived on 6 August and the normal counting schedule was resumed.

During August the daily task of cleaning the weir took several hours because of the large number of pink salmon carcasses. Three crewmembers should be the minimum crew size, in future even years when there are large pink salmon returns.

In September of 1995 radio communication problems developed. For several days at a time we lost radio contact. During 1996 the same radio problems occurred, but a moveable satellite telephone that was purchased for the project worked very well in place of the radio.

The same counting schedule was maintained throughout the entire season in 1996. This change from the 1995 operation made the operation much simpler and significantly reduced the amount of time required to expand the counts and present them in a coherent and consistent manner.

Sampling of salmon provides an important opportunity to contact the public. The crew visited most subsistence camps and explained the project while they were sampling chum salmon. Similarly the crew interacted with sport fishers while sampling coho salmon.

These activities stimulated public awareness, education, understanding and support for the project.

ACKNOWLEDGEMENTS

The crew members for the entire season were Kate Persons and Carl "Bones" Brown. Peter Rob was the third crewmember from 17 June to 5 August and from 23 August to 20 September. Bill Cavenay and David Bonilla filled in while Peter Rob was on another on the Niukluk River. Tracy Lingnau pressed and aged all of scale samples. Fred DeCicco analyzed the coho salmon scale sample data. Drafts of this report were reviewed by Larry Buklis.

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Table 1. Expanded daily and cumulative migration of all salmonid species past the Niukluk River counting tower, Norton Sound, 1996.

Shaded areas indicate periods of interpolated results because of weir washout

Date	Daily chum salmon	Cumulative chum salmon	Daily pink salmon	Cumulative pink salmon	Daily king salmon	Cumulative king salmon	Daily coho salmon	Cumulative coho salmon	Daily Dolly Varden	Cumulative Dolly Varden
23-Jun	80	80	20	20	0	0	0	0	8	8
24-Jun	456	536	68	88	0	0	0	0	14	22
25-Jun	470	1,005	140	228	0	0	0	0	26	48
26-Jun	63	1,068	138	366	0	0	0	0	8	56
27-Jun	1,299	2,367	207	573	0	0	0	0	5	61
28-Jun	2,536	4,903	276	849	0	0	0	0	2	63
29-Jun	2,780	7,683	1,022	1,871	0	0	0	0	8	71
30-Jun	2,339	10,022	1,716	3,587	0	0	0	0	8	79
1-Jul	1,071	11,093	1,649	5,236	4	4	0	0	8	87
2-Jul	2,008	13,101	4,978	10,214	9	13	0	0	12	99
3-Jul	3,336	16,437	3,540	13,754	30	43	2	2	10	109
4-Jul	3,198	19,636	6,434	20,188	30	73	1	3	8	117
5-Jul	3,060	22,696	9,328	29,516	30	103	0	3	6	123
6-Jul	5,438	28,134	33,679	63,195	32	135	0	3	22	145
7-Jul	4,661	32,795	47,413	110,608	12	147	0	3	39	184
8-Jul	4,758	37,552	75,705	186,313	28	175	0	3	85	269
9-Jul	5,126	42,678	124,230	310,543	12	187	2	5	188	457
10-Jul	3,600	46,278	104,368	414,911	4	191	6	11	178	635
11-Jul	2,312	48,590	55,808	470,719	2	193	3	14	104	739
12-Jul	1,024	49,615	7,247	477,966	0	193	0	14	29	768
13-Jul	2,104	51,719	25,116	503,082	2	195	16	30	41	809
14-Jul	4,812	56,531	101,013	604,095	2	197	17	47	46	855
15-Jul	2,422	58,953	68,126	672,221	2	199	17	63	10	865
16-Jul	2,672	61,624	68,675	740,896	0	199	3	67	4	869
17-Jul	2,100	63,724	60,150	801,046	2	201	10	77	4	873
18-Jul	1,928	65,652	54,108	855,154	3	204	10	87	5	878
19-Jul	1,756	67,408	48,066	903,220	4	208	10	97	6	884
20-Jul	2,922	70,329	76,038	979,259	0	208	43	140	2	886
21-Jul	883	71,212	31,445	1,010,703	0	208	9	149	6	892
22-Jul	689	71,902	15,786	1,026,489	2	210	5	154	2	894
23-Jul	786	72,688	20,795	1,047,284	4	214	11	165	6	900
24-Jul	892	73,580	15,280	1,062,564	0	214	18	183	4	904
25-Jul	795	74,374	13,578	1,076,142	0	214	38	221	5	909
26-Jul	719	75,093	12,098	1,088,240	0	215	57	279	6	916
27-Jul	697	75,790	11,876	1,100,115	1	215	58	337	6	922
28-Jul	612	76,402	10,301	1,110,416	1	216	78	415	7	929
29-Jul	524	76,926	8,693	1,119,109	1	216	97	512	8	937
30-Jul	453	77,379	7,246	1,126,355	1	217	109	621	9	946
31-Jul	356	77,735	5,543	1,131,898	1	218	149	769	10	956
1-Aug	319	78,054	7,238	1,139,136	1	219	159	928	10	966
2-Aug	250	78,304	5,257	1,144,393	1	221	172	1,100	11	977

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Table 1. (Page 2 of 2).

Date	Daily chum salmon	Cumulative chum salmon	Daily pink salmon	Cumulative pink salmon	Daily king salmon	Cumulative king salmon	Daily coho salmon	Cumulative coho salmon	Daily Dolly Varden	Cumulative Dolly Varden
3-Aug	156	78,460	2,927	1,147,320	2	222	195	1,295	12	989
4-Aug	145	78,605	3,293	1,150,612	3	225	222	1,516	16	1,005
5-Aug	197	78,803	1,936	1,152,549	4	228	216	1,733	8	1,013
6-Aug	131	78,934	668	1,153,216	2	230	114	1,847	10	1,023
7-Aug	57	78,990	213	1,153,430	2	232	42	1,888	18	1,041
8-Aug	120	79,110	222	1,153,652	0	232	212	2,100	4	1,045
9-Aug	120	79,230	177	1,153,829	0	232	259	2,359	5	1,050
10-Aug	120	79,350	133	1,153,962	0	232	306	2,665	6	1,056
11-Aug	133	79,483	40	1,154,002	2	234	395	3,060	8	1,064
12-Aug	36	79,520	142	1,154,144	0	234	278	3,338	15	1,079
13-Aug	84	79,604	116	1,154,260	0	234	232	3,570	8	1,087
14-Aug	59	79,663	35	1,154,295	0	234	429	3,999	8	1,094
15-Aug	14	79,677	26	1,154,321	2	236	1,678	5,677	30	1,124
16-Aug	20	79,696	17	1,154,338	1	237	1,154	6,831	58	1,183
17-Aug	25	79,721	7	1,154,345	0	237	631	7,462	86	1,269
18-Aug	25	79,747	57	1,154,402	0	237	485	7,947	128	1,396
19-Aug	26	79,773	91	1,154,493	0	237	356	8,303	191	1,587
20-Aug	18	79,791	110	1,154,603	0	237	243	8,546	111	1,698
21-Aug	4	79,795	12	1,154,615	0	237	410	8,955	237	1,934
22-Aug	4	79,799	24	1,154,639	0	237	482	9,437	160	2,094
23-Aug	20	79,819	-2	1,154,637	0	237	373	9,810	139	2,233
24-Aug	40	79,859	-14	1,154,622	0	237	399	10,210	143	2,376
25-Aug	16	79,875	46	1,154,668	0	237	738	10,948	247	2,623
26-Aug	17	79,891	29	1,154,697	0	237	418	11,366	102	2,725
27-Aug	33	79,924	9	1,154,706	0	237	47	11,414	36	2,761
28-Aug	14	79,938	31	1,154,737	0	237	172	11,585	60	2,820
29-Aug	26	79,964	20	1,154,757	0	237	294	11,879	68	2,888
30-Aug	21	79,985	19	1,154,776	0	237	206	12,085	62	2,950
31-Aug	18	80,003	20	1,154,796	0	237	177	12,262	62	3,012
1-Sep	12	80,015	19	1,154,816	0	237	88	12,350	55	3,067
2-Sep	28	80,043	20	1,154,836	0	237	74	12,424	41	3,108
3-Sep	20	80,063	9	1,154,845	0	237	91	12,515	155	3,263
4-Sep	16	80,079	4	1,154,849	0	237	43	12,558	141	3,405
5-Sep	4	80,083	2	1,154,851	0	237	76	12,634	162	3,567
6-Sep	12	80,095	6	1,154,857	0	237	61	12,695	132	3,699
7-Sep	20	80,115	10	1,154,867	0	237	45	12,740	103	3,802
8-Sep	0	80,115	6	1,154,873	0	237	10	12,751	27	3,829
9-Sep	-2	80,113	2	1,154,875	0	237	12	12,763	18	3,847
10-Sep	4	80,117	4	1,154,879	0	237	6	12,769	26	3,873
11-Sep	2	80,119	2	1,154,881	0	237	-6	12,763	16	3,889
12-Sep	2	80,121	0	1,154,881	0	237	18	12,781	16	3,905

Table 2. Expanded daily hourly chum salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
23-Jun																				80	0.1%
24-Jun	74	122	116	42	30	0	-68	18	26	8	0	-8	12	0	-44	-2	20	38	72	456	0.6%
25-Jun	92	0	56	0	10	0	-70	-4	-4	8	-6	14	124	20	38	80	34	28	50	470	0.6%
26-Jun	60	82	330	52	-10	16	-9	-22	-54	-28	4	-32	-22	-4	4	-32	0	-66	-206	63	0.1%
27-Jun	209	198	302	83	0	10	-195	-19	-34	-9	1	-8	45	143	246	131	140	14	42	1,299	1.6%
28-Jun	358	314	274	114	10	4	-380	-16	-14	10	-2	16	112	290	488	294	280	94	290	2,536	3.2%
29-Jun	618	558	470	252	130	144	-416	-6	6	30	-52	-8	0	2	24	100	172	482	274	2,780	3.5%
30-Jun	558	334	226	264	-8	50	-351	-6	-20	-28	-46	-42	66	172	188	106	326	244	306	2,339	2.9%
1-Jul	276	284	110	134	64	12	-71	-44	-120	-84	-26	-18	-36	-6	34	-2	270	120	174	1,071	1.3%
2-Jul	340	464	398	306	298	178	-134	6	-10	0	10	-36	-12	-6	12	-32	56	76	94	2,008	2.5%
3-Jul	166	116	-32	-26	-68	2	-222	2	-20	124	64	176	268	320	296	382	466	750	572	3,336	4.2%
4-Jul	253	245	222	207	141	165	-213	-3	-9	59	31	71	143	167	151	280	321	492	475	3,198	4.0%
5-Jul	340	374	476	440	350	328	-204	-8	2	-6	-2	-34	18	14	6	178	176	234	378	3,060	3.8%
6-Jul	1,022	670	556	768	654	470	-362	-20	20	38	42	72	-4	98	116	144	348	286	520	5,438	6.8%
7-Jul	496	614	532	452	382	362	329	-14	14	18	132	90	36	88	192	266	136	256	280	4,661	5.8%
8-Jul	630	516	512	342	380	210	336	8	24	100	-12	54	88	200	230	218	250	184	488	4,758	5.9%
9-Jul	446	522	696	278	134	168	362	24	92	50	110	122	24	164	454	412	410	360	298	5,126	6.4%
10-Jul	298	218	170	58	68	116	254	-4	18	18	-4	70	106	236	700	314	412	356	196	3,600	4.5%
11-Jul	191	175	120	68	75	87	163	-14	8	23	5	47	60	185	377	187	222	215	118	2,312	2.9%
12-Jul	84	132	70	78	82	58	72	-24	-2	28	14	24	14	134	54	60	32	74	40	1,024	1.3%
13-Jul	226	196	54	66	72	58	148	6	18	20	10	24	70	124	182	148	238	160	284	2,104	2.6%
14-Jul	230	394	300	210	236	262	1,040	12	144	194	40	198	106	136	308	210	326	232	234	4,812	6.0%
15-Jul	244	236	226	182	138	136	524	-14	0	12	22	30	46	56	94	174	150	104	62	2,422	3.0%
16-Jul	92	132	36	30	38	110	578	10	32	4	58	96	100	118	146	402	194	254	242	2,672	3.3%
17-Jul	208	212	146	50	42	44	454	32	76	56	72	66	98	100	116	48	98	54	128	2,100	2.6%
18-Jul	192	165	104	51	41	49	417	16	39	39	63	104	129	104	91	53	99	68	104	1,928	2.4%
19-Jul	176	118	62	52	40	54	380	0	2	22	54	142	160	108	66	58	100	82	80	1,756	2.2%
20-Jul	230	192	130	52	72	128	632	12	22	58	64	90	86	126	150	290	254	194	140	2,922	3.6%
21-Jul	68	80	52	16	18	46	99	12	12	34	38	62	62	68	62	48	24	32	50	883	1.1%
22-Jul	36	40	2	2	6	28	77	-8	12	20	24	24	32	48	50	70	48	96	82	689	0.9%

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Table 2. (Page 2 of 3).

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
23-Jul	58	12	12	6	16	50	88	2	0	10	30	92	60	64	74	60	38	66	48	786	1.0%
24-Jul	74	48	0	6	4	20	100	2	-6	26	32	30	46	30	52	112	80	116	120	892	1.1%
25-Jul	65	44	1	6	4	19	89	1	-6	22	28	27	41	27	46	99	72	103	109	795	1.0%
26-Jul	56	39	1	6	4	19	81	1	-6	22	28	27	41	24	40	86	65	89	98	719	0.9%
27-Jul	56	39	1	6	3	17	78	1	-6	19	23	25	36	24	40	86	65	89	98	697	0.9%
28-Jul	47	35	2	6	3	17	69	1	-6	19	23	22	30	21	33	73	57	76	87	612	0.8%
29-Jul	38	30	2	6	3	16	59	0	-6	15	19	22	30	18	27	60	49	62	76	524	0.7%
30-Jul	38	30	2	6	3	16	51	0	-6	15	19	19	25	15	21	47	41	49	65	453	0.6%
31-Jul	29	26	3	6	2	14	40	-1	-6	11	14	16	20	12	15	34	34	35	54	356	0.4%
1-Aug	20	21	3	6	2	13	27	-2	-6	7	10	16	20	12	15	34	34	35	54	319	0.4%
2-Aug	20	21	3	6	2	13	21	-2	-6	7	10	14	15	9	8	21	26	22	43	250	0.3%
3-Aug	11	17	4	6	1	11	13	-3	-6	4	5	11	9	6	2	8	18	8	32	156	0.2%
4-Aug	2	12	4	6	1	11	12	-3	-6	4	5	11	9	10	15	12	20	14	6	145	0.2%
5-Aug	8	20	2	6	1	10	16	-3	-6	0	1	8	4	14	28	16	22	32	20	197	0.2%
6-Aug	3	15	7	10	1	10	11	-3	-6	0	1	1	1	16	16	-12	6	40	16	131	0.2%
7-Aug	-2	10	12	14	0	8	5	-4	-6	-4	-4	-6	-2	2	10	4	8	6	6	57	0.1%
8-Aug	8	2	24	32	6	2	10	4	4	6	-2	4	4	2	0	4	4	6	0	120	0.1%
9-Aug	11	5	23	21	4	-2	10	-1	2	3	1	3	1	1	1	2	10	10	15	120	0.1%
10-Aug	14	8	22	10	2	-6	10	-6	0	0	4	2	-2	0	2	0	16	14	30	120	0.1%
11-Aug	12	6	14	12	12	0	11	-4	2	0	0	0	-2	0	2	2	24	18	24	133	0.2%
12-Aug	4	2	4	4	6	-2	10	-4	-4	0	-2	0	2	2	2	0	4	0	8	36	0.0%
13-Aug	2	12	4	4	2	10	24	2	0	2	0	2	6	0	4	4	-2	4	4	84	0.1%
14-Aug	8	14	4	2	4	2	17	-2	0	-2	0	2	2	0	0	4	2	2	0	59	0.1%
15-Aug	-2	0	0	2	0	0	4	0	2	0	2	0	4	2	0	0	0	0	0	14	0.0%
16-Aug	1	0	0	1	0	0	6	0	1	0	2	2	2	1	1	0	1	0	0	20	0.0%
17-Aug	4	0	0	0	0	0	7	0	0	0	2	4	0	2	2	2	0	2	0	25	0.0%
18-Aug	0	2	0	0	0	0	7	0	0	2	0	0	0	2	2	4	4	2	0	25	0.0%
19-Aug	0	0	0	0	0	0	0	-2	2	6	2	0	6	0	6	4	6	-2	-2	26	0.0%
20-Aug	2	0	0	0	0	0	0	0	0	0	0	0	4	0	6	4	-2	4	0	18	0.0%
21-Aug	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4	0.0%

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Table 2. (Page 3 of 3).

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
22-Aug	0	2	0	0	0	0	0	0	2	-2	0	0	-2	2	0	0	0	0	2	4	0.0%
23-Aug	0	3	1	0	1	1	0	0	1	-1	0	1	-1	2	4	4	0	4	20	0.0%	
24-Aug	0	4	2	0	2	2	0	0	0	0	0	2	0	2	8	8	0	8	2	40	0.0%
25-Aug	4	2	0	0	0	0	0	0	2	0	4	2	0	0	0	2	0	0	0	16	0.0%
26-Aug	0	0	0	0	0	0	3	0	0	0	0	0	0	2	4	2	2	2	2	17	0.0%
27-Aug	0	2	0	0	0	0	5	0	0	0	2	0	2	2	4	0	2	4	10	33	0.0%
28-Aug	0	2	6	2	2	0	2	0	0	0	-2	0	0	0	0	0	0	2	0	14	0.0%
29-Aug	0	6	0	2	2	2	4	0	0	2	2	2	0	0	2	2	0	0	0	26	0.0%
30-Aug	0	5	1	2	2	2	3	1	0	2	2	2	0	0	1	1	0	0	0	21	0.0%
31-Aug	0	4	1	1	2	1	3	1	0	1	1	1	0	0	1	1	0	0	0	18	0.0%
1-Sep	0	3	2	1	2	1	2	2	0	1	1	1	0	0	0	0	0	0	0	12	0.0%
2-Sep	0	2	2	0	2	0	14	2	0	0	0	0	0	4	0	0	2	0	0	28	0.0%
3-Sep	2	2	0	0	0	0	10	0	2	0	0	0	0	0	2	2	0	0	0	20	0.0%
4-Sep	2	2	4	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	16	0.0%
5-Sep	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	4	0.0%
6-Sep	0	1	0	1	0	2	6	0	0	0	0	0	1	0	1	0	0	0	0	12	0.0%
7-Sep	0	2	0	2	0	2	10	0	0	0	0	0	2	0	2	0	0	0	0	20	0.0%
8-Sep	0	0	-2	0	2	-2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.0%
9-Sep	0	-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-2	0.0%
10-Sep	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	-2	4	0.0%
11-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.0%
12-Sep	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.0%
13-Sep	End of counting season																			80,121	
Total	8,810	8,211	6,884	4,831	3,526	3,571	4,115	-87	206	1,012	966	1,769	2,344	3,536	5,328	5,378	6,375	6,440	6,906	80,121	
	11.0%	10.2%	8.6%	6.0%	4.4%	4.5%	5.1%	-0.1%	0.3%	1.3%	1.2%	2.2%	2.9%	4.4%	6.6%	6.7%	8.0%	8.0%	8.6%	80,121	

Table 3. Expanded daily hourly pink salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
23-Jun								0	0	0	0	0	0	0	0	4	8	4	4	20	0.0%
24-Jun	4	12	8	8	8	4	-20	0	2	-2	0	0	0	4	0	-2	8	10	24	68	0.0%
25-Jun	28	8	16	12	16	10	-40	-6	10	8	4	6	24	2	4	6	10	4	18	140	0.0%
26-Jun	14	10	54	24	10	16	-40	2	-4	6	2	4	2	2	2	18	14	2	0	138	0.0%
27-Jun	17	22	42	34	12	9	-60	1	-2	3	1	2	8	11	1	48	11	21	26	207	0.0%
28-Jun	20	34	30	44	14	2	-80	0	0	0	0	0	14	20	0	78	8	40	52	276	0.0%
29-Jun	48	142	190	158	98	64	-296	-6	6	18	2	-4	4	2	8	28	58	376	126	1,022	0.1%
30-Jun	234	184	186	266	112	134	-498	2	-6	12	-2	20	30	52	124	112	212	344	198	1,716	0.1%
1-Jul	186	242	222	174	88	54	-41	-18	30	-14	14	12	14	-8	74	158	214	82	166	1,649	0.1%
2-Jul	436	734	738	608	654	550	-124	18	12	12	12	20	38	76	74	46	350	198	526	4,978	0.4%
3-Jul	506	372	116	146	210	88	-88	42	22	68	66	86	176	174	248	186	318	372	432	3,540	0.3%
4-Jul	448	457	526	727	871	731	-160	34	48	42	41	58	110	141	268	620	420	503	549	6,434	0.6%
5-Jul	390	542	936	1,308	1,532	1,374	-232	26	74	16	16	30	44	108	288	1,054	522	634	666	9,328	0.8%
6-Jul	1,820	1,540	1,724	2,356	1,802	2,974	-837	30	70	80	74	230	24	852	980	1,696	6,154	4,998	7,112	33,679	2.9%
7-Jul	4,098	4,840	4,094	3,856	3,304	3,068	899	-28	-4	-24	222	308	60	122	1,530	3,572	4,802	5,484	7,210	47,413	4.1%
8-Jul	11,776	8,964	6,628	4,292	4,276	4,016	1,435	-80	-66	-104	-46	278	302	1,074	2,396	3,988	6,990	8,702	10,884	75,705	6.6%
9-Jul	11,792	12,570	11,466	4,436	1,208	3,698	2,354	-68	-6	20	362	1,484	1,104	3,504	18,320	13,526	13,768	11,106	13,586	124,230	10.8%
10-Jul	11,382	7,422	4,206	756	442	808	1,978	354	98	238	298	576	412	2,478	13,424	12,754	23,880	12,410	10,452	104,368	9.0%
11-Jul	7,176	5,405	2,570	765	666	774	1,058	-871	-263	-563	-548	-72	138	2,404	7,179	6,602	11,654	6,200	5,534	55,808	4.8%
12-Jul	2,970	3,388	934	774	890	740	137	-2,096	-624	-1,364	-1,394	-720	-136	2,330	934	450	-572	-10	616	7,247	0.6%
13-Jul	2,748	1,198	-908	-244	-438	-728	476	-18	30	-4	102	508	392	2,808	2,324	2,474	3,020	3,740	7,636	25,116	2.2%
14-Jul	4,646	4,528	3,464	2,006	1,740	2,506	17,905	234	2,922	6,418	2,706	7,298	5,898	6,952	8,242	7,152	6,164	5,256	4,976	101,013	8.7%
15-Jul	5,388	3,598	3,234	2,266	1,858	3,930	12,076	-336	-144	80	1,038	2,266	5,506	2,866	4,976	6,000	4,824	5,750	2,950	68,126	5.9%
16-Jul	5,168	2,926	72	-14	176	3,296	12,173	-322	130	168	704	2,232	2,518	4,202	7,662	7,940	5,840	7,514	6,290	68,675	5.9%
17-Jul	4,988	4,498	1,332	254	190	1,558	10,662	740	1,742	2,112	3,674	3,370	2,304	5,218	5,620	2,792	3,374	2,636	3,086	60,150	5.2%
18-Jul	5,294	3,243	948	237	276	1,639	9,591	331	763	903	2,307	3,096	3,308	4,740	5,491	3,227	3,447	2,855	2,412	54,108	4.7%
19-Jul	5,600	1,988	564	220	362	1,720	8,520	-78	-216	-306	940	2,822	4,312	4,262	5,362	3,662	3,520	3,074	1,738	48,066	4.2%
20-Jul	5,412	4,516	1,450	200	550	2,630	13,478	416	778	1,370	2,582	4,050	3,324	3,746	6,228	8,834	6,754	6,146	3,574	76,038	6.6%
21-Jul	1,466	1,694	100	6	2	650	1,593	444	1,048	1,426	1,224	3,526	4,432	4,486	3,326	2,970	1,642	792	618	31,445	2.7%
22-Jul	334	140	-48	-12	8	114	800	40	-60	4	254	356	1,362	2,314	2,322	1,686	1,068	2,778	2,326	15,786	1.4%

- continued -

Table 3. (Page 2 of 3).

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
23-Jul	1,432	98	0	-2	6	1,456	1,053	14	-4	168	938	1,702	2,548	2,552	3,442	1,574	1,112	1,662	1,044	20,795	1.8%	
24-Jul	1,032	640	-18	6	20	610	774	-30	4	12	376	100	698	516	1,580	1,678	1,670	2,348	3,264	15,280	1.3%	
25-Jul	922	591	21	8	19	536	688	-28	4	11	329	92	615	465	1,391	1,478	1,485	2,074	2,879	13,578	1.2%	
26-Jul	812	541	60	8	19	536	613	-28	4	11	329	92	615	414	1,202	1,278	1,300	1,800	2,493	12,098	1.0%	
27-Jul	812	541	60	10	18	462	602	-25	3	10	283	83	532	414	1,202	1,278	1,300	1,800	2,493	11,876	1.0%	
28-Jul	702	492	99	12	18	462	522	-25	3	10	283	75	449	362	1,013	1,078	1,115	1,526	2,108	10,301	0.9%	
29-Jul	592	442	138	12	17	387	440	-23	3	8	236	75	449	311	824	878	930	1,252	1,722	8,693	0.8%	
30-Jul	592	442	138	14	17	387	367	-23	3	8	236	66	366	260	635	678	745	978	1,337	7,246	0.6%	
31-Jul	482	393	177	16	16	313	281	-20	2	7	189	58	283	209	446	478	560	704	951	5,543	0.5%	
1-Aug	372	343	216	16	15	239	2,217	-18	2	6	142	58	283	209	446	478	560	704	951	7,238	0.6%	
2-Aug	372	343	216	18	15	239	1,610	-18	2	6	142	49	200	157	257	278	375	430	566	5,257	0.5%	
3-Aug	262	294	255	20	14	165	897	-15	1	5	96	41	117	106	68	78	190	156	180	2,927	0.3%	
4-Aug	152	244	294	20	14	165	1,009	-15	1	5	96	41	117	92	70	123	155	322	390	3,293	0.3%	
5-Aug	238	76	56	22	13	90	593	-13	1	3	49	32	34	78	72	168	120	172	132	1,936	0.2%	
6-Aug	126	45	40	18	13	90	205	-13	1	3	49	16	17	20	2	-8	2	18	24	668	0.1%	
7-Aug	14	14	24	14	12	16	65	-10	0	2	2	0	0	16	18	24	2	0	0	213	0.0%	
8-Aug	20	4	6	36	40	2	68	12	8	0	10	2	2	8	0	2	0	0	2	222	0.0%	
9-Aug	21	8	5	22	27	3	54	6	3	0	6	2	6	4	1	1	2	2	4	177	0.0%	
10-Aug	22	12	4	8	14	4	41	0	-2	0	2	2	10	0	2	0	4	4	6	133	0.0%	
11-Aug	6	2	4	0	2	0	12	-2	0	0	0	2	0	0	2	0	2	4	6	40	0.0%	
12-Aug	4	0	0	2	6	2	22	0	0	0	0	0	8	10	16	10	8	22	32	142	0.0%	
13-Aug	4	6	2	0	4	2	18	8	6	0	16	20	26	0	0	0	2	0	2	116	0.0%	
14-Aug	2	0	2	0	0	0	5	2	4	6	0	2	10	0	0	0	0	2	0	35	0.0%	
15-Aug	2	0	0	0	0	0	4	2	0	0	0	0	10	6	2	0	0	0	0	26	0.0%	
16-Aug	3	1	0	0	0	0	3	1	0	0	0	0	5	3	1	0	0	0	0	17	0.0%	
17-Aug	4	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	7	0.0%	
18-Aug	10	0	0	0	0	0	9	0	0	4	0	0	0	0	0	0	0	0	10	24	57	0.0%
19-Aug	12	0	2	0	4	0	15	0	0	0	8	2	4	0	12	8	10	4	10	91	0.0%	
20-Aug	2	4	0	2	0	0	18	2	0	0	0	4	12	2	18	6	12	18	10	110	0.0%	
21-Aug	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	2	6	0	12	0.0%	

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Table 3. (Page 3 of 3).

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total																	
22-Aug	0	0	0	0	0	0	4	2	0	2	0	-2	2	0	0	0	6	2	8	24	0.0%																	
23-Aug	0	0	0	0	0	0	0	2	0	1	0	-1	1	1	0	-3	2	-5	-2	0.0%																		
24-Aug	0	0	0	0	0	0	-2	2	0	0	0	0	2	0	-6	-2	-12	4	-14	0.0%																		
25-Aug	0	2	4	0	4	2	8	2	6	0	0	0	0	2	2	0	4	8	2	46	0.0%																	
26-Aug	0	4	0	0	4	2	3	2	0	0	-2	0	2	0	2	8	4	-2	2	29	0.0%																	
27-Aug	0	2	0	0	0	0	1	0	-2	0	4	-2	2	0	0	0	0	2	2	9	0.0%																	
28-Aug	0	2	2	0	4	2	3	2	0	0	6	4	0	8	-2	-2	2	0	0	31	0.0%																	
29-Aug	0	2	0	0	0	0	2	0	0	4	6	-6	6	4	2	-2	0	2	0	20	0.0%																	
30-Aug	0	2	1	1	1	0	2	1	0	4	4	-4	5	2	1	0	0	1	1	19	0.0%																	
31-Aug	0	1	1	1	1	0	2	1	0	4	2	-2	4	2	1	0	0	1	1	20	0.0%																	
1-Sep	0	1	2	2	2	0	2	2	0	4	0	0	3	0	0	2	0	0	2	19	0.0%																	
2-Sep	0	0	2	2	2	0	0	2	0	4	-2	2	2	0	2	0	2	2	0	20	0.0%																	
3-Sep	4	2	0	0	0	0	0	0	0	2	0	1	2	0	0	-2	0	0	0	9	0.0%																	
4-Sep	0	0	0	0	0	-2	0	2	0	0	2	0	0	0	2	0	0	0	0	4	0.0%																	
5-Sep	0	0	0	0	0	0	0	2	0	0	-2	0	0	0	0	0	0	2	0	2	0.0%																	
6-Sep	1	0	0	1	0	0	0	1	0	0	-1	0	0	0	0	1	0	2	1	6	0.0%																	
7-Sep	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	10	0.0%																	
8-Sep	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	6	0.0%																
9-Sep	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.0%																
10-Sep	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0.0%																
11-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0.0%																	
12-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%																
13-Sep	End of counting season																					1,154,881																
Total	103,426	80,810	46,708	25,953	21,297	42,597	104,850	-1,446	6,439	10,931	18,487	34,444	43,171	61,175	110,139	103,245	120,165	108,048	114,442	9.0%	7.0%	4.0%	2.2%	1.8%	3.7%	9.1%	-0.1%	0.6%	0.9%	1.6%	3.0%	3.7%	5.3%	9.5%	8.9%	10.4%	9.4%	9.9%

Table 4. Expanded daily hourly king salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
23-Jun								0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Start of counting season						-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
24-Jun	0	0	2	0	0	0														2	0	
25-Jun	0	0	0	0	0	0	-8	0	0	0	0	0	0	2	2	0	2	2	0	0	0.0%	
26-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
27-Jun	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0%	
28-Jun	0	0	0	0	0	0	-2	0	0	0	0	0	0	0	0	0	0	0	0	2	0.0%	
29-Jun	0	0	0	0	2	0	-10	0	0	0	0	0	0	0	0	0	0	0	2	6	0.0%	
30-Jun	6	4	-2	0	0	0	-22	0	0	0	0	0	0	0	2	2	4	2	4	0	0.0%	
1-Jul	2	0	0	0	0	0	0	0	0	0	2	-2	0	0	0	2	0	0	0	0	4	1.8%
2-Jul	2	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	9	3.6%
3-Jul	0	2	2	0	-2	0	2	0	0	0	2	0	0	12	2	2	0	4	4	30	12.7%	
4-Jul	0	3	5	-1	-1	5	2	1	2	1	1	0	0	6	1	1	0	2	2	30	12.7%	
5-Jul	0	4	8	-2	0	10	2	2	4	2	0	0	0	0	0	0	0	0	0	0	30	12.7%
6-Jul	12	14	2	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	32	13.6%
7-Jul	0	4	2	2	0	0	0	0	-2	0	0	0	0	0	0	0	2	2	2	12	5.1%	
8-Jul	4	10	2	2	4	0	0	0	0	0	4	-4	-2	0	0	0	0	0	2	6	28	11.8%
9-Jul	2	0	0	0	0	-2	0	0	0	0	0	0	0	0	4	6	0	0	2	12	5.1%	
10-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	4	1.7%
11-Jul	0	0	0	0	0	0	0	0	-1	0	0	0	1	0	1	1	0	0	0	0	2	0.8%
12-Jul	0	0	0	0	0	0	0	0	-2	0	0	0	0	0	2	0	0	0	0	0	0	0.0%
13-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0.8%
14-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0.8%
15-Jul	2	0	0	0	0	0	0	0	0	2	-2	0	0	0	0	0	0	0	0	0	2	0.8%
16-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
17-Jul	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0.8%
18-Jul	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	3	1.3%
19-Jul	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	4	1.7%
20-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
21-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
22-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0.8%

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Table 4. (Page 2 of 3).

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
23-Jul	0	0	0	0	0	2		0	0	0	2	0	0	0	0	0	0	0	0	4	1.7%
24-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
25-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.1%
26-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.1%
27-Jul	0	0	0	0	1	0		0	0	0	0	0	0	0	0	0	0	0	0	1	0.2%
28-Jul	0	0	0	0	1	0		0	0	0	0	0	0	0	0	0	0	0	0	1	0.2%
29-Jul	0	0	0	0	1	0		0	0	0	0	0	0	0	0	0	0	0	0	1	0.3%
30-Jul	0	0	0	0	1	0		0	0	0	0	0	0	0	0	0	0	0	0	1	0.3%
31-Jul	0	0	0	0	1	0		0	0	0	0	0	0	0	0	0	0	0	0	1	0.4%
1-Aug	0	0	0	0	1	0		0	0	0	0	0	0	0	0	0	0	0	0	1	0.5%
2-Aug	0	0	0	0	1	0		0	0	0	0	0	0	0	0	0	0	0	0	1	0.5%
3-Aug	0	0	0	0	2	0		0	0	0	0	0	0	0	0	0	0	0	0	2	0.6%
4-Aug	0	0	0	0	2	0		0	0	0	0	0	0	0	0	1	0	0	0	3	1.1%
5-Aug	0	0	0	0	2	0		0	0	0	0	0	0	0	0	2	0	0	0	4	1.6%
6-Aug	0	0	0	0	2	0		0	0	0	0	0	0	0	0	0	0	0	0	2	0.7%
7-Aug	0	0	0	0	2	0		0	0	0	0	0	0	0	0	0	0	0	0	2	0.8%
8-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
9-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
10-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
11-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	2	0	0.8%
12-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
13-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
14-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
15-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	2	0	0	0.8%
16-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0	1	0.4%
17-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
18-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
19-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
20-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
21-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%

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Table 4. (Page 3 of 3).

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
22-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
23-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
24-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
25-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
26-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
27-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
28-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
29-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
30-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
31-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
1-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
2-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
3-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
4-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
5-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
6-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
7-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
8-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
9-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
10-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
11-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
12-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
13-Sep	End of counting season																				
Total	30	45	21	1	20	15	-38	9	1	11	-1	-4	3	20	20	20	13	20	31	237	
	12.7%	19.0%	8.9%	0.4%	8.4%	6.3%	-16.0%	3.8%	0.4%	4.6%	-0.4%	-1.7%	1.3%	8.4%	8.4%	8.4%	5.5%	8.4%	13.1%		

Table 5. Expanded daily hourly coho salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total		
23-Jun								0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Start of counting season																				0	0.0%	
24-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
25-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
26-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
27-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
28-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
29-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
30-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
1-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
2-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
3-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0.0%	
4-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0%	
5-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
6-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
7-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
8-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
9-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0.0%	
10-Jul	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	2	0	0	0	0	6	0.0%	
11-Jul	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	3	0.0%	
12-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
13-Jul	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	4	0	2	2	2	16	0.1%	
14-Jul	0	0	0	0	0	0	7	0	2	2	0	0	0	0	0	0	4	2	0	0	17	0.1%	
15-Jul	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	4	4	2	0	0	17	0.1%
16-Jul	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0.0%
17-Jul	0	0	0	0	0	0	4	0	0	0	4	2	0	0	0	0	0	0	0	0	10	0.1%	
18-Jul	1	0	0	0	0	0	4	0	0	0	2	1	0	0	2	0	0	0	0	0	10	0.1%	
19-Jul	2	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4	0	0	0	0	10	0.1%	
20-Jul	2	2	0	2	0	0	17	0	2	0	4	2	2	0	0	0	0	4	6	0	43	0.3%	
21-Jul	0	0	0	0	0	-1	0	0	2	0	2	0	2	0	2	0	2	2	0	0	9	0.1%	
22-Jul	0	0	0	0	0	-1	0	0	0	0	2	4	0	0	0	0	0	0	0	0	5	0.0%	

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Table 5. (Page 2 of 3).

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
23-Jul	0	0	0	0	0	0	-1	0	0	0	0	2	2	0	0	2	0	2	4	11	0.1%
24-Jul	2	0	0	0	0	0	-2	0	0	0	0	2	4	2	4	0	2	4	0	18	0.1%
25-Jul	8	3	2	1	0	0	-4	0	0	0	0	2	4	3	4	1	7	6	3	38	0.3%
26-Jul	14	5	3	1	0	0	-6	0	0	0	0	2	4	4	4	2	12	8	7	57	0.4%
27-Jul	14	5	3	3	0	0	-6	0	0	0	0	2	3	4	4	2	12	8	7	58	0.5%
28-Jul	19	8	5	4	0	0	-9	0	0	0	0	2	3	5	4	2	17	9	10	78	0.6%
29-Jul	25	10	6	4	0	0	-11	0	0	0	0	2	3	6	4	3	22	11	13	97	0.8%
30-Jul	25	10	6	5	0	0	-12	0	0	0	0	2	2	7	4	4	27	13	16	109	0.9%
31-Jul	31	13	8	6	0	0	6	0	0	0	0	2	2	8	4	5	32	15	20	149	1.2%
1-Aug	37	15	9	6	0	0	6	0	0	0	0	2	2	8	4	5	32	15	20	159	1.2%
2-Aug	37	15	9	8	0	0	6	0	0	0	0	2	1	9	4	5	37	16	23	172	1.3%
3-Aug	42	18	11	9	0	0	7	0	0	0	0	2	1	10	4	6	42	18	26	195	1.5%
4-Aug	48	20	12	9	0	0	8	0	0	0	0	2	1	11	13	5	29	28	36	222	1.7%
5-Aug	40	38	24	10	0	0	8	0	0	0	0	2	0	12	22	4	16	18	22	216	1.7%
6-Aug	20	23	12	5	0	0	4	0	0	0	0	1	1	2	2	0	22	6	16	114	0.9%
7-Aug	0	8	0	0	0	0	2	0	0	0	0	2	2	4	0	0	22	2	42	0.3%	
8-Aug	12	16	8	8	2	4	8	2	4	2	4	0	4	16	10	18	32	26	36	212	1.7%
9-Aug	57	25	9	4	9	5	10	0	1	1	2	0	1	10	5	11	24	25	60	259	2.0%
10-Aug	102	34	10	0	16	6	12	-2	-2	0	0	0	-2	4	0	4	16	24	84	306	2.4%
11-Aug	48	40	18	18	16	6	15	-2	0	0	2	4	8	8	4	16	28	68	98	395	3.1%
12-Aug	148	16	34	18	18	0	10	2	2	0	0	0	0	0	2	0	2	8	18	278	2.2%
13-Aug	20	16	8	8	4	8	8	0	4	4	8	2	4	14	20	10	24	20	50	232	1.8%
14-Aug	74	46	50	28	16	8	15	0	6	10	2	2	6	2	16	14	16	34	84	429	3.4%
15-Aug	406	262	350	66	30	74	60	18	2	22	20	12	20	20	74	48	48	44	102	1,678	13.1%
16-Aug	258	276	198	47	22	45	41	14	3	12	11	10	11	10	44	27	31	31	63	1,154	9.0%
17-Aug	110	290	46	28	14	16	23	10	4	2	2	8	2	0	14	6	14	18	24	631	4.9%
18-Aug	188	58	68	30	18	24	17	-2	0	2	4	0	0	6	8	18	12	22	12	485	3.8%
19-Aug	76	76	86	54	18	-2	-66	-2	2	4	0	10	2	6	6	10	4	8	64	356	2.8%
20-Aug	54	28	82	60	18	4	-45	0	0	0	0	6	8	4	0	16	4	4	243	1.9%	
21-Aug	44	76	110	62	48	58	-76	-2	0	0	2	8	0	0	0	2	10	6	62	410	3.2%

- continued -

Table 5. (Page 3 of 3).

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
22-Aug	100	150	102	64	52	18	-90	2	0	0	2	2	0	0	6	2	22	2	48	482	3.8%
23-Aug	87	112	73	48	33	8	-70	1	0	0	1	2	0	28	18	3	12	17		373	2.9%
24-Aug	74	74	44	32	14	-2	-75	0	0	0	0	2	0	56	30	4	2	32	112	399	3.1%
25-Aug	104	40	34	28	68	16	-138	-4	2	4	20	28	74	96	28	36	174	52	76	738	5.8%
26-Aug	116	84	92	46	36	6	-6	-14	-4	0	2	2	0	2	0	8	24	16	8	418	3.3%
27-Aug	0	-46	22	18	-12	0	-1	0	0	0	0	0	0	0	24	8	0	2	32	47	0.4%
28-Aug	18	32	-6	30	0	-2	-2	2	0	0	0	0	0	0	4	0	2	4	90	172	1.3%
29-Aug	54	54	34	32	0	0	-4	0	0	0	2	0	0	20	12	14	8	6	62	294	2.3%
30-Aug	45	42	25	27	2	2	-3	1	1	0	2	1	4	10	5	8	5	2	32	206	1.6%
31-Aug	35	29	15	21	3	3	-2	1	1	0	1	1	7	10	5	8	5	2	32	177	1.4%
1-Sep	26	17	6	16	5	5	-1	2	2	0	1	2	11	0	-2	2	2	-2	2	88	0.7%
2-Sep	16	4	-4	10	6	6	2	2	2	0	0	2	14	8	2	-2	0	4	2	74	0.6%
3-Sep	-4	12	16	8	8	6	2	0	0	2	2	3	0	6	4	6	0	12	8	91	0.7%
4-Sep	10	10	4	0	4	-2	1	-4	0	4	4	4	2	2	0	2	2	0	0	43	0.3%
5-Sep	12	0	8	2	6	2	2	4	4	2	6	2	4	0	4	0	6	0	12	76	0.6%
6-Sep	11	4	5	3	6	3	2	1	3	2	3	1	3	-1	1	0	1	2	11	61	0.5%
7-Sep	10	8	2	4	6	4	1	-2	2	2	0	0	2	-2	-2	0	-4	4	10	45	0.4%
8-Sep	0	2	0	0	2	-2	0	0	0	0	2	2	0	4	2	0	2	-4	0	10	0.1%
9-Sep	0	2	0	0	4	-6	0	4	2	-2	0	-2	0	-2	6	0	0	4	2	12	0.1%
10-Sep	4	-4	0	2	0	0	0	2	-2	0	-2	2	2	0	-2	4	6	0	-6	6	0.0%
11-Sep	4	0	-4	0	-2	0	0	0	0	0	0	0	0	-4	2	0	0	-2	-6	0.0%	
12-Sep	12	-2	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	0	2	18	0.1%
13-Sep	End of counting season																				
Total	2,695	2,073	1,652	893	489	320	-311	35	45	77	112	147	228	438	450	349	869	698	1,522	12,781	
	21.1%	16.2%	12.9%	7.0%	3.8%	2.5%	-2.4%	0.3%	0.4%	0.6%	0.9%	1.2%	1.8%	3.4%	3.5%	2.7%	6.8%	5.5%	11.9%		

Table 6. Expanded daily hourly Dolly Varden migration past the Niukluk River counting tower, Norton Sound, 1996.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total		
23-Jun								0	0	2	0	0	0	0	0	6	-2	0	0	2	8	0.2%	
24-Jun	0	0	2	0	0	0	0	0	0	2	0	0	0	-2	0	0	2	4	0	6	14	0.4%	
25-Jun	0	0	0	0	0	0	0	0	2	0	0	0	0	0	4	4	8	2	2	4	26	0.7%	
26-Jun	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	4	0	8	0.2%	
27-Jun	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	5	0.1%	
28-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0.1%	
29-Jun	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	0	2	0	8	0.2%	
30-Jun	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	4	0	0	8	0.2%	
1-Jul	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	2	8	0.2%	
2-Jul	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	12	0.3%	
3-Jul	2	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2	0	0	0	0	10	0.3%	
4-Jul	1	0	0	0	0	0	0	0	1	0	1	1	0	0	2	1	0	0	0	0	1	8	0.2%
5-Jul	0	0	0	0	0	0	0	0	0	0	0	2	0	0	4	0	0	0	0	0	6	0.2%	
6-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	6	2	4	6	0	22	0.6%	
7-Jul	6	0	0	0	0	4	7	2	-2	0	2	0	-2	0	4	10	4	0	4	39	1.0%		
8-Jul	0	0	6	2	10	2	15	0	0	0	2	2	0	0	10	6	10	10	10	85	2.2%		
9-Jul	2	6	0	0	12	0	34	0	0	0	0	2	0	4	18	26	42	30	12	188	4.8%		
10-Jul	0	0	0	0	2	0	32	4	0	6	2	8	8	18	34	14	18	20	12	178	4.6%		
11-Jul	3	0	0	0	1	0	19	2	0	3	1	6	4	10	20	8	9	11	7	104	2.7%		
12-Jul	6	0	0	0	0	0	5	0	0	0	0	4	0	2	6	2	0	2	2	29	0.7%		
13-Jul	0	0	0	0	0	0	7	0	0	2	2	2	0	2	8	4	4	4	6	41	1.1%		
14-Jul	0	0	0	0	0	0	0	0	0	4	0	0	0	4	12	6	8	4	8	46	1.2%		
15-Jul	0	0	0	0	0	0	0	0	0	0	-2	0	0	2	4	0	4	0	2	10	0.3%		
16-Jul	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	4	0.1%	
17-Jul	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0.1%	
18-Jul	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0.1%	
19-Jul	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0.2%	
20-Jul	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.1%	
21-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	2	6	0.2%	
22-Jul	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.1%	

- continued -

Table 6. (Page 2 of 3).

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
23-Jul	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	2	4	6	0.2%
24-Jul	0	0	0	0	0	0		0	0	0	0	0	0	2	2	0	0	0	0	0	4	0.1%
25-Jul	0	0	0	0	0	0		0	0	0	0	0	0	2	2	0	0	0	0	0	5	0.1%
26-Jul	1	0	0	0	0	0		0	0	0	0	0	0	2	2	0	1	1	1	1	6	0.2%
27-Jul	1	0	0	0	0	0		0	0	0	0	0	0	2	2	0	1	1	1	1	6	0.2%
28-Jul	1	0	0	0	0	0		0	0	0	0	0	0	1	2	0	1	1	1	1	7	0.2%
29-Jul	1	0	0	0	0	0		0	0	0	0	0	0	1	2	0	1	1	1	1	8	0.2%
30-Jul	1	0	0	0	0	0		0	0	0	0	0	0	1	2	0	1	1	1	1	9	0.2%
31-Jul	1	0	0	0	0	0		0	0	0	0	0	0	1	2	0	2	2	2	2	10	0.3%
1-Aug	2	0	0	0	0	0		0	0	0	0	0	0	1	2	0	2	2	2	2	10	0.3%
2-Aug	2	0	0	0	0	0		0	0	0	0	0	0	1	2	0	2	2	2	2	11	0.3%
3-Aug	2	0	0	0	0	0		0	0	0	0	0	0	0	2	0	2	2	2	2	12	0.3%
4-Aug	2	0	0	0	0	0		0	0	0	0	0	0	0	1	0	2	1	6	4	16	0.4%
5-Aug	0	2	4	0	0	0		0	0	0	0	0	0	0	0	0	2	0	0	0	8	0.2%
6-Aug	0	2	2	0	0	0		0	0	0	0	0	0	0	0	0	2	0	0	2	10	0.3%
7-Aug	0	2	0	0	0	0		0	0	0	0	0	0	0	2	4	6	4	0	0	18	0.5%
8-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	2	0	0	0	2	4	0.1%
9-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	2	0	1	0	2	5	0.1%
10-Aug	0	0	0	0	0	0		0	0	0	0	0	0	0	0	2	0	2	0	2	6	0.2%
11-Aug	0	0	0	0	0	0		0	0	0	0	0	0	2	0	0	0	2	2	2	8	0.2%
12-Aug	0	0	0	0	0	0		7	2	2	0	2	0	0	0	0	2	0	0	0	15	0.4%
13-Aug	0	0	0	0	0	0		4	0	0	0	0	0	0	0	2	0	0	0	2	8	0.2%
14-Aug	2	0	0	0	0	0		4	0	0	0	0	0	0	0	2	0	0	0	0	8	0.2%
15-Aug	4	0	0	2	0	0		14	2	0	-2	2	0	0	0	4	0	2	0	2	30	0.8%
16-Aug	3	2	1	1	1	1		27	1	0	-1	2	0	1	0	5	3	2	3	6	58	1.5%
17-Aug	2	4	2	0	2	2		40	0	0	0	2	0	2	0	6	6	2	6	10	86	2.2%
18-Aug	0	0	4	0	0	0		60	2	0	4	0	2	6	0	0	4	24	6	16	128	3.3%
19-Aug	6	12	8	4	4	4		-33	6	10	-2	8	4	2	6	2	6	52	18	74	191	4.9%
20-Aug	10	10	14	6	12	12		-19	4	4	4	8	4	16	6	2	-2	-2	14	8	111	2.8%
21-Aug	20	8	16	30	4	8		-41	6	2	4	2	30	38	6	0	-2	8	32	66	237	6.1%

- continued -

Table 6. (Page 3 of 3).

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
22-Aug	40	12	6	18	14	16	-28	0	6	2	4	0	0	0	0	0	16	36	18	160	4.1%	
23-Aug	46	11	9	15	12	14	-24	5	-1	2	4	1	4	1	3	2	9	26	139	3.6%		
24-Aug	52	10	12	12	10	12	-25	10	-8	2	4	2	8	2	6	4	2	16	12	143	3.7%	
25-Aug	24	20	2	10	30	16	-43	10	2	16	14	76	26	6	2	4	6	8	18	247	6.3%	
26-Aug	34	4	16	14	12	10	6	2	2	0	0	0	0	0	0	0	0	0	2	102	2.6%	
27-Aug	8	8	0	-2	8	2	2	2	-2	0	0	0	0	0	2	4	2	2	0	36	0.9%	
28-Aug	6	4	6	6	-2	2	4	6	4	10	0	0	14	0	0	0	0	0	0	60	1.5%	
29-Aug	2	2	4	14	8	0	4	0	0	0	2	-2	2	6	4	2	0	2	18	68	1.7%	
30-Aug	5	4	4	11	7	0	4	1	1	-1	2	-1	1	4	2	1	1	7	11	62	1.6%	
31-Aug	8	5	3	8	5	0	4	1	2	-1	2	0	-1	4	2	1	1	7	11	62	1.6%	
1-Sep	11	7	3	5	4	0	3	2	3	-2	2	1	-3	2	0	0	2	12	4	55	1.4%	
2-Sep	14	8	2	2	2	0	5	2	4	-2	2	2	-4	0	4	0	0	0	0	41	1.1%	
3-Sep	8	4	10	2	0	10	19	0	0	0	5	3	0	4	24	10	10	32	14	155	4.0%	
4-Sep	24	14	12	6	14	8	17	0	0	0	8	4	2	2	2	6	-2	20	4	141	3.6%	
5-Sep	16	8	26	14	12	6	20	0	0	0	2	0	0	0	2	0	4	20	32	162	4.1%	
6-Sep	13	14	18	8	10	5	16	0	0	0	1	0	0	0	3	1	4	16	23	132	3.4%	
7-Sep	10	20	10	2	8	4	13	0	0	0	0	0	0	0	4	2	4	12	14	103	2.6%	
8-Sep	6	2	10	2	6	-2	3	0	0	0	0	0	0	0	0	0	0	0	0	27	0.7%	
9-Sep	2	4	0	6	0	-6	0	0	0	0	0	0	0	0	0	0	0	4	2	6	18	0.5%
10-Sep	8	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	10	26	0.7%
11-Sep	4	4	-2	-4	0	0	0	0	0	0	0	0	0	0	0	2	6	4	2	16	0.4%	
12-Sep	4	4	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0.4%	
13-Sep	End of counting season																					
Total	437	218	215	200	212	137	180	80	31	56	88	150	137	132	233	175	298	427	499	3,905		
	11.2%	5.6%	5.5%	5.1%	5.4%	3.5%	4.6%	2.0%	0.8%	1.4%	2.3%	3.8%	3.5%	3.4%	6.0%	4.5%	7.6%	10.9%	12.8%			

Table 7. Reported hourly chum salmon observations at the Niukluk River counting tower, Norton Sound, 1996.

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
23-Jun														-2	0	0	0	0	0	0	0	0	66	6	10	80	0.1%
24-Jun	74	122	116	42	30	0								18	26	8	0	-8	12	0	-44	-2	20	38	72	524	0.8%
25-Jun	92	0	56	0	10	0								-4	-4	8	-6	14	124	20	38	80	34	28	50	540	0.9%
26-Jun	60	82	330	52	-10	16								-22	-54	-28	4	-32	-22	-4	4	-32	0	-66	-206	72	0.1%
27-Jun																											0.0%
28-Jun	358	314	274	114	10	4	-230	-54	-30	-32	-4	-30	-16	-14	10	-2	16	112	290	488	294	280	94	290	2,536	4.0%	
29-Jun	618	558	470	252	130	144								-6	6	30	-52	-8	0	2	24	100	172	482	274	3,196	5.1%
30-Jun	558	334	226	264	-8	50								-6	-20	-28	-46	-42	66	172	188	106	326	244	306	2,690	4.3%
1-Jul	276	284	110	134	64	12								-44	-120	-84	-26	-18	-36	-6	34	-2	270	120	174	1,142	1.8%
2-Jul	340	464	398	306	298	178								6	-10	0	10	-36	-12	-6	12	-32	56	76	94	2,142	3.4%
3-Jul	166	116	-32	-26	-68	2	-44	-46	-20	-46	-42	-24	2	-20	124	64	176	268	320	296	382	466	750	572	3,336	5.3%	
4-Jul																											0.0%
5-Jul	340	374	476	440	350	328								-8	2	-6	-2	-34	18	14	6	178	176	234	378	3,264	5.2%
6-Jul	1,022	670	556	768	654	470								-20	20	38	42	72	-4	98	116	144	348	286	520	5,800	9.2%
7-Jul	496	614	532	452	382	362								-14	14	18	132	90	36	88	192	266	136	256	280	4,332	6.9%
8-Jul	630	516	512	342	380	210								8	24	100	-12	54	88	200	230	218	250	184	488	4,422	7.0%
9-Jul	446	522	696	278	134	168								24	92	50	110	122	24	164	454	412	410	360	298	4,764	7.6%
10-Jul	298	218	170	58	68	116	102	90	14	10	36	2	-4	18	18	-4	70	106	236	700	314	412	356	196	3,600	5.7%	
11-Jul																											0.0%
12-Jul	84	132	70	78	82	58								-24	-2	28	14	24	14	134	54	60	32	74	40	952	1.5%
13-Jul	226	196	54	66	72	58								6	18	20	10	24	70	124	182	148	238	160	284	1,956	3.1%
14-Jul	230	394	300	210	236	262								12	144	194	40	198	106	136	308	210	326	232	234	3,772	6.0%
15-Jul	244	236	226	182	138	136								-14	0	12	22	30	46	56	94	174	150	104	62	1,898	3.0%
16-Jul	92	132	36	30	38	110								10	32	4	58	96	100	118	146	402	194	254	242	2,094	3.3%
17-Jul	208	212	146	50	42	44	170	86	42	74	54	28	32	76	56	72	66	98	100	116	48	98	54	128	2,100	3.3%	
18-Jul																											0.0%
19-Jul	176	118	62	52	40	54								0	2	22	54	142	160	108	66	58	100	82	80	1,376	2.2%
20-Jul	230	192	130	52	72	128								12	22	58	64	90	86	126	150	290	254	194	140	2,290	3.6%
21-Jul	68	80	52	16	18	46								12	12	34	38	62	62	68	62	48	24	32	50	784	1.2%
22-Jul	36	40	2	2	6	28								-8	12	20	24	24	32	48	50	70	48	96	82	612	1.0%

- continued -

Table 7. (Page 2 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
23-Jul	58	12	12	6	16	50					2	0	10	30	92	60	64	74	60	38	66	48		698	1.1%		
24-Jul	74	48	0	6	4	20	54	18	20	2	-2	8	2	-6	26	32	30	46	30	52	112	80	116	120	892	1.4%	
25-Jul																										0.0%	
26-Jul																										0.0%	
27-Jul																										0.0%	
28-Jul																										0.0%	
29-Jul																										0.0%	
30-Jul																										0.0%	
31-Jul																										0.0%	
1-Aug																										0.0%	
2-Aug																										0.0%	
3-Aug																										0.1%	
4-Aug	2	12	4																							38	0.1%
5-Aug	8	20	2	6																						180	0.3%
6-Aug																										82	0.1%
7-Aug	-2	10	12	14	0	8					-4	-6	-4	-4	-6	-2	2	10	4	8	6	6			52	0.1%	
8-Aug	8	2	24	32	6	2	-6	6	4	-2	0	8	4	4	6	-2	4	4	2	0	4	4	6	0	120	0.2%	
9-Aug																										0.0%	
10-Aug	14	8	22	10	2	-6					-6	0	0	4	2	-2	0	2	0	16	14	30		110	0.2%		
11-Aug	12	6	14	12	12	0					-4	2	0	0	0	-2	0	2	2	24	18	24		122	0.2%		
12-Aug	4	2	4	4	6	-2					-4	-4	0	-2	0	2	2	2	0	4	0	8		26	0.0%		
13-Aug	2	12	4	4	2	10					2	0	2	0	2	6	0	4	4	-2	4	4		60	0.1%		
14-Aug	8	14	4	2	4	2					-2	0	-2	0	2	2	0	0	4	2	2	0		42	0.1%		
15-Aug	-2	0	0	2	0	0	2	0	2	-2	2	0	0	2	0	4	2	0	0	0	0	0		14	0.0%		
16-Aug																										0.0%	
17-Aug	4	0	0	0	0	0					0	0	0	2	4	0	2	2	2	0	2	0		18	0.0%		
18-Aug	0	2	0	0	0	0					0	0	2	0	0	0	2	2	4	4	2	0		18	0.0%		
19-Aug	0	0	0	0	0	0					-2	2	6	2	0	6	0	6	4	6	-2	-2		26	0.0%		
20-Aug	2	0	0	0	0	0					0	0	0	0	0	4	0	6	4	-2	4	0		18	0.0%		
21-Aug	0	0	0	0	0	0					4	0	0	0	0	0	0	0	0	0	0	0		4	0.0%		

- continued -

Table 7. (Page 3 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
22-Aug	0	2	0	0	0	0	0	0	0	0	0	0	0	2	-2	0	0	-2	2	0	0	0	0	2	4	0.0%
23-Aug																										0.0%
24-Aug	0	4	2	0	2	2																			40	0.1%
25-Aug	4	2	0	0	0	0																			16	0.0%
26-Aug	0	0	0	0	0	0																			14	0.0%
27-Aug	0	2	0	0	0	0																			28	0.0%
28-Aug	0	2	6	2	2	0																			12	0.0%
29-Aug	0	6	0	2	2	2	0	0	0	2	2	0	0	2	2	2	0	0	2	2	0	0	0	0	26	0.0%
30-Aug																										0.0%
31-Aug																										0.0%
1-Sep																										0.0%
2-Sep	0	2	2	0	2	0																			14	0.0%
3-Sep	2	2	0	0	0	0																			10	0.0%
4-Sep	2	2	4	0	0	0																			8	0.0%
5-Sep	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.0%
6-Sep																										0.0%
7-Sep	0	2	0	2	0	2																			10	0.0%
8-Sep	0	0	-2	0	2	-2																			0	0.0%
9-Sep	0	-2	0	0	0	0																			-2	0.0%
10-Sep	0	0	0	2	2	0																			4	0.0%
11-Sep	0	0	0	0	0	0																			2	0.0%
12-Sep	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.0%
13-Sep																										0.0%
End of counting season																										
Total	7,570	7,092	6,082	4,320	3,232	3,074	48	100	32	6	48	-8	-56	276	752	678	1,336	1,688	2,760	4,196	4,166	5,122	5,078	5,468	63,060	

Table 8. Reported hourly pink salmon observations at the Niukluk River counting tower, Norton Sound, 1996.

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
23-Jun														0	0	0	0	0	0	0	0	4	8	4	4	20	0.0%
24-Jun	4	12	8	8	8	4								0	2	-2	0	0	0	4	0	-2	8	10	24	88	0.0%
25-Jun	28	8	16	12	16	10								-6	10	8	4	6	24	2	4	6	10	4	18	180	0.0%
26-Jun	14	10	54	24	10	16								2	-4	6	2	4	2	2	2	18	14	2	0	178	0.0%
27-Jun																										0.0%	
28-Jun	20	34	30	44	14	2	-48	-22	-6	-6	4	-2	0	0	0	0	0	14	20	0	78	8	40	52	276	0.0%	
29-Jun	48	142	190	158	98	64								-6	6	18	2	-4	4	2	8	28	58	376	126	1,318	0.1%
30-Jun	234	184	186	266	112	134								2	-6	12	-2	20	30	52	124	112	212	344	198	2,214	0.3%
1-Jul	186	242	222	174	88	54								-18	30	-14	14	12	14	-8	74	158	214	82	166	1,690	0.2%
2-Jul	436	734	738	608	654	550								18	12	12	12	20	38	76	74	46	350	198	526	5,102	0.6%
3-Jul	506	372	116	146	210	88	-32	-38	16	-16	-16	-2	42	22	68	66	86	176	174	248	186	318	372	432	3,540	0.4%	
4-Jul																										0.0%	
5-Jul	390	542	936	1,308	1,532	1,374								26	74	16	16	30	44	108	288	1,054	522	634	666	9,560	1.1%
6-Jul	1,820	1,540	1,724	2,356	1,802	2,974								30	70	80	74	230	24	852	980	1,696	6,154	4,998	7,112	34,516	3.9%
7-Jul	4,098	4,840	4,094	3,856	3,304	3,068								-28	-4	-24	222	308	60	122	1,530	3,572	4,802	5,484	7,210	46,514	5.3%
8-Jul	11,776	8,964	6,628	4,292	4,276	4,016								-80	-66	-104	-46	278	302	1,074	2,396	3,988	6,990	8,702	10,884	74,270	8.4%
9-Jul	11,792	12,570	11,466	4,436	1,208	3,698								-68	-6	20	362	1,484	1,104	3,504	18,320	13,526	13,768	11,106	13,586	121,876	13.9%
10-Jul	11,382	7,422	4,206	756	442	808	694	844	120	104	42	174	354	98	238	298	576	412	2,478	13,424	12,754	23,880	12,410	10,452	104,368	11.9%	
11-Jul																										0.0%	
12-Jul	2,970	3,388	934	774	890	740								-2,096	-624	-1,364	-1,394	-720	-136	2,330	934	450	-572	-10	616	7,110	0.8%
13-Jul	2,748	1,198	-908	-244	-438	-728								-18	30	-4	102	508	392	2,808	2,324	2,474	3,020	3,740	7,636	24,640	2.8%
14-Jul	4,646	4,528	3,464	2,006	1,740	2,506								234	2,922	6,418	2,706	7,298	5,898	6,952	8,242	7,152	6,164	5,256	4,976	83,108	9.4%
15-Jul	5,388	3,598	3,234	2,266	1,858	3,930								-336	-144	80	1,038	2,266	5,506	2,866	4,976	6,000	4,824	5,750	2,950	56,050	6.4%
16-Jul	5,168	2,926	72	-14	176	3,296								-322	130	168	704	2,232	2,518	4,202	7,662	7,940	5,840	7,514	6,290	56,502	6.4%
17-Jul	4,988	4,498	1,332	254	190	1,558	3,644	2,424	1,270	1,480	1,234	610	740	1,742	2,112	3,674	3,370	2,304	5,218	5,620	2,792	3,374	2,636	3,086	60,150	6.8%	
18-Jul																										0.0%	
19-Jul	5,600	1,988	564	220	362	1,720								-78	-216	-306	940	2,822	4,312	4,262	5,362	3,662	3,520	3,074	1,738	39,546	4.5%
20-Jul	5,412	4,516	1,450	200	550	2,630								416	778	1,370	2,582	4,050	3,324	3,746	6,228	8,834	6,754	6,146	3,574	62,560	7.1%
21-Jul	1,466	1,694	100	6	2	650								444	1,048	1,426	1,224	3,526	4,432	4,486	3,326	2,970	1,642	792	618	29,852	3.4%
22-Jul	334	140	-48	-12	8	114								40	-60	4	254	356	1,362	2,314	2,322	1,686	1,068	2,778	2,326	14,986	1.7%

- continued -

Table 8. (Page 2 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total			
23-Jul	1,432	98	0	-2	6	1,456								14	-4	168	938	1,702	2,548	2,552	3,442	1,574	1,112	1,662	1,044	19,742	2.2%		
24-Jul	1,032	640	-18	6	20	610	932	144	-102	-154	16	-62	-30	4	12	376	100	698	516	1,580	1,678	1,670	2,348	3,264	15,280	1.7%			
25-Jul																										0.0%			
26-Jul																										0.0%			
27-Jul																										0.0%			
28-Jul																										0.0%			
29-Jul																										0.0%			
30-Jul																										0.0%			
31-Jul																										0.0%			
1-Aug																										0.0%			
2-Aug																										0.0%			
3-Aug																										0.1%			
4-Aug	152	244	294																							1,402	0.2%		
5-Aug	238	76	56	22																						1,200	0.1%		
6-Aug																										58	0.0%		
7-Aug	14	14	24	14	12	16								-10	0	2	2	0	0	16	18	24	2	0	0	0	148	0.0%	
8-Aug	20	4	6	36	40	2	18	12	6	8	16	8	12	8	0	10	2	2	8	0	2	0	0	0	2	222	0.0%		
9-Aug																										0.0%			
10-Aug	22	12	4	8	14	4									0	-2	0	2	2	10	0	2	0	4	4	6	92	0.0%	
11-Aug	6	2	4	0	2	0									-2	0	0	0	2	0	0	2	0	2	4	6	28	0.0%	
12-Aug	4	0	0	2	6	2									0	0	0	0	0	8	10	16	10	8	22	32	120	0.0%	
13-Aug	4	6	2	0	4	2									8	6	0	16	20	26	0	0	0	2	0	2	98	0.0%	
14-Aug	2	0	2	0	0	0									2	4	6	0	2	10	0	0	0	0	2	0	30	0.0%	
15-Aug	2	0	0	0	0	0	0	4	0	0	0	0	0	2	0	0	0	0	10	6	2	0	0	0	0	26	0.0%		
16-Aug																										0.0%			
17-Aug	4	2	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0	0	6	0.0%	
18-Aug	10	0	0	0	0	0									0	0	4	0	0	0	0	0	0	0	0	10	24	48	0.0%
19-Aug	12	0	2	0	4	0									0	0	0	8	2	4	0	12	8	10	4	10	76	0.0%	
20-Aug	2	4	0	2	0	0									2	0	0	0	4	12	2	18	6	12	18	10	92	0.0%	

- continued -

Table 8. (Page 3 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
21-Aug	0	2	0	0	0	0							2	0	0	0	2	6	0	-4	-4	-2	6	10	18	0.0%
22-Aug	0	0	0	0	0	0	0	0	0	0	4	0	2	0	2	0	-2	2	0	0	0	6	2	8	24	0.0%
23-Aug																										0.0%
24-Aug	0	0	0	0	0	0							2	0	0	0	0	0	2	0	-6	-2	-12	4	-12	0.0%
25-Aug	0	2	4	0	4	2							2	6	0	0	0	0	2	2	0	4	8	2	38	0.0%
26-Aug	0	4	0	0	4	2							2	0	0	-2	0	2	0	2	8	4	-2	2	26	0.0%
27-Aug	0	2	0	0	0	0							0	-2	0	4	-2	2	0	0	0	0	2	2	8	0.0%
28-Aug	0	2	2	0	4	2							2	0	0	6	4	0	8	-2	-2	2	0	0	28	0.0%
29-Aug	0	2	0	0	0	0	0	0	2	0	0	0	0	0	4	6	-6	6	4	2	-2	0	2	0	20	0.0%
30-Aug																										0.0%
31-Aug																										0.0%
1-Sep																			0	0	2	0	0	2	4	0.0%
2-Sep	0	0	2	2	2	0							2	0	4	-2	2	2	0	2	0	2	2	0	20	0.0%
3-Sep	4	2	0	0	0	0							0	0	2			2	0	0	-2	0	0	0	8	0.0%
4-Sep	0	0	0	0	0	-2							2	0	0	2	0	0	0	2	0	0	0	0	4	0.0%
5-Sep	0	0	0	0	0	0	0	0	0	0	-4	2	2	2	0	0	-2	0	0	0	0	0	2	0	2.0%	
6-Sep																										0.0%
7-Sep	2	0	0	2	0	0							0	0	0	0	0	0	0	0	2	0	2	2	10	0.0%
8-Sep	2	0	0	0	0	0							0	0	0	0	0	0	0	0	0	2	2	0	6	0.0%
9-Sep	0	0	2	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	2	0.0%
10-Sep	2	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	2	0.0%
11-Sep	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	2	0.0%
12-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
13-Sep																										
																										End of counting season
Total	84,420	67,208	41,194	23,992	19,234	35,372	5,208	3,370	1,304	1,412	1,302	728	-692	5,864	10,442	14,218	30,624	35,544	50,976	89,706	84,720	96,100	87,200	90,426	879,872	

Table 9. Reported hourly king salmon observations at the Niukluk River counting tower, Norton Sound, 1996.

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total			
23-Jun														0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
24-Jun	0	0	2	0	0	0								0	0	0	0	0	0	0	0	0	0	0	2	4	1.8%		
25-Jun	0	0	0	0	0	0								0	0	0	0	0	0	2	2	0	2	2	0	8	3.5%		
26-Jun	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
27-Jun																										0	0.0%		
28-Jun	0	0	0	0	0	0	0	-2	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	2	0	0.0%		
29-Jun	0	0	0	0	2	0								0	0	0	0	0	0	0	0	0	0	0	2	6	10.4%		
30-Jun	6	4	-2	0	0	0								0	0	0	0	0	0	0	0	2	2	4	2	22	9.7%		
1-Jul	2	0	0	0	0	0								0	0	0	2	-2	0	0	0	2	0	0	0	0	4	1.8%	
2-Jul	2	4	0	0	0	0								0	0	0	0	0	0	0	0	0	2	0	0	8	3.5%		
3-Jul	0	2	2	0	-2	0	0	0	2	0	0	0	0	0	0	2	0	0	12	2	2	0	4	4	30	13.3%			
4-Jul																										0	0.0%		
5-Jul	0	4	8	-2	0	10								2	4	2	0	0	0	0	0	0	0	0	0	0	28	12.4%	
6-Jul	12	14	2	0	2	0								0	0	0	0	0	0	0	0	0	0	0	0	0	30	13.3%	
7-Jul	0	4	2	2	0	0								0	-2	0	0	0	0	0	0	0	0	0	0	0	12	5.3%	
8-Jul	4	10	2	2	4	0								0	0	4	-4	-2	0	0	0	0	0	0	0	0	28	12.4%	
9-Jul	2	0	0	0	0	-2								0	0	0	0	0	0	0	4	6	0	0	0	12	5.3%		
10-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	4	1.8%		
11-Jul																										0	0.0%		
12-Jul	0	0	0	0	0	0								0	-2	0	0	0	0	0	2	0	0	0	0	0	0	0	0.0%
13-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	2	0	0	0	0	2	0.9%	
14-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	2	0	0	0	2	0.9%	
15-Jul	2	0	0	0	0	0								0	0	2	-2	0	0	0	0	0	0	0	0	0	2	0.9%	
16-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
17-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0.9%	
18-Jul																										0	0.0%		
19-Jul	0	0	0	0	0	0								2	0	0	0	0	0	0	0	2	0	0	0	0	4	1.8%	
20-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
21-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
22-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	2	0	2	0.9%	

- continued -

Table 9. (Page 2 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total		
23-Jul	0	0	0	0	0	2								0	0	2	0	0	0	0	0	0	0	0	0	4	1.8%	
24-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
25-Jul																										0.0%		
26-Jul																										0.0%		
27-Jul																										0.0%		
28-Jul																										0.0%		
29-Jul																										0.0%		
30-Jul																										0.0%		
31-Jul																										0.0%		
1-Aug																										0.0%		
2-Aug																										0.0%		
3-Aug																			0	0	0	0	0	0	0	0	0.0%	
4-Aug	0	0	0																							0	0.0%	
5-Aug	0	0	0	0														0	0	0	2	0	0	0	0	2	0.9%	
6-Aug																			0	0	0	0	0	0	0	0	0.0%	
7-Aug	0	0	0	0	2	0											0	0	0	0	0	0	0	0	0	2	0.9%	
8-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
9-Aug																										0.0%		
10-Aug	0	0	0	0	0	0	0										0	0	0	0	0	0	0	0	0	0	0	0.0%
11-Aug	0	0	0	0	0	0	0										0	0	0	0	0	0	0	0	0	2	0	0.9%
12-Aug	0	0	0	0	0	0	0										0	0	0	0	0	0	0	0	0	0	0	0.0%
13-Aug	0	0	0	0	0	0	0										0	0	0	0	0	0	0	0	0	0	0	0.0%
14-Aug	0	0	0	0	0	0	0										0	0	0	0	0	0	0	0	0	0	0	0.0%
15-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0.9%		
16-Aug																										0.0%		
17-Aug	0	0	0	0	0	0	0										0	0	0	0	0	0	0	0	0	0	0	0.0%
18-Aug	0	0	0	0	0	0	0										0	0	0	0	0	0	0	0	0	0	0	0.0%
19-Aug	0	0	0	0	0	0	0										0	0	0	0	0	0	0	0	0	0	0	0.0%
20-Aug	0	0	0	0	0	0	0										0	0	0	0	0	0	0	0	0	0	0	0.0%
21-Aug	0	0	0	0	0	0	0										0	0	0	0	0	0	0	0	0	0	0	0.0%

- continued -

Table 9. (Page 3 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
22-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
23-Aug																										0.0%	
24-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
25-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
26-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
27-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
28-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
29-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
30-Aug																										0.0%	
31-Aug																										0.0%	
1-Sep																			0	0	0	0	0	0	0	0.0%	
2-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
3-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
4-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
5-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
6-Sep																										0.0%	
7-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
8-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
9-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
10-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
11-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
12-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
13-Sep																										End of counting season	
Total	30	42	16	2	8	10	0	0	0	0	0	0	0	0	0	0	6	0	10	-2	-4	2	14	16	18	28	226

Table 10. Reported hourly coho salmon observations at the Niukluk River counting tower, Norton Sound, 1996.

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
23-Jun																										0	0.0%
24-Jun	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
25-Jun	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
26-Jun	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
27-Jun																											0.0%
28-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	
29-Jun	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
30-Jun	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
1-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
2-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
3-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2.0%		
4-Jul																											0.0%
5-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
6-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
7-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
8-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
9-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	2	0	0	0	2.0%
10-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	2	0	0	0	6	0.1%	
11-Jul																											0.0%
12-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
13-Jul	0	0	0	0	0	0								2	0	0	0	0	2	2	4	0	2	2	2	16	0.2%
14-Jul	0	0	0	0	0	0								0	2	2	0	0	0	0	0	4	2	0	0	10	0.1%
15-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	4	4	2	0	10	0.1%
16-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	2	0	0	0	2	0.0%
17-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	2	0	0	0	0	10	0.1%	
18-Jul																											0.0%
19-Jul	2	0	0	0	0	0								0	0	0	0	0	0	0	4	0	0	0	0	6	0.1%
20-Jul	2	2	0	2	0	0								0	2	0	4	2	2	0	0	0	4	6	0	26	0.3%
21-Jul	0	0	0	0	0	0								0	0	2	0	2	0	2	0	2	2	0	0	10	0.1%
22-Jul	0	0	0	0	0	0								0	0	0	0	2	4	0	0	0	0	0	0	6	0.1%

- continued -

Table 10. (Page 2 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total				
23-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	2	0	2	4	12	0.1%				
24-Jul	2	0	0	0	0	0	0	0	0	0	-2	0	0	0	0	0	2	4	2	4	0	2	4	0	18	0.2%				
25-Jul																										0.0%				
26-Jul																										0.0%				
27-Jul																										0.0%				
28-Jul																										0.0%				
29-Jul																										0.0%				
30-Jul																										0.0%				
31-Jul																										0.0%				
1-Aug																										0.0%				
2-Aug																										0.0%				
3-Aug																										106	1.1%			
4-Aug	48	20	12																							144	1.5%			
5-Aug	40	38	24	10																						208	2.2%			
6-Aug																										48	0.5%			
7-Aug	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4	0	0	22	2	40	0.4%					
8-Aug	12	16	8	8	2	4	2	2	0	0	2	2	2	2	4	2	4	0	4	16	10	18	32	26	36	212	2.2%			
9-Aug																										0.0%				
10-Aug	102	34	10	0	16	6											-2	-2	0	0	0	-2	4	0	4	16	24	84	294	3.1%
11-Aug	48	40	18	18	16	6											-2	0	0	2	4	8	8	4	16	28	68	98	380	4.0%
12-Aug	148	16	34	18	18	0											2	2	0	0	0	0	0	2	0	2	8	18	268	2.8%
13-Aug	20	16	8	8	4	8											0	4	4	8	2	4	14	20	10	24	20	50	224	2.3%
14-Aug	74	46	50	28	16	8											0	6	10	2	2	6	2	16	14	16	34	84	414	4.3%
15-Aug	406	262	350	66	30	74	6	24	8	0	14	8	18	2	22	20	12	20	20	74	48	48	44	102	1,678	17.6%				
16-Aug																										0.0%				
17-Aug	110	290	46	28	14	16											10	4	2	2	8	2	0	14	6	14	18	24	608	6.4%
18-Aug	188	58	68	30	18	24											-2	0	2	4	0	0	6	8	18	12	22	12	468	4.9%
19-Aug	76	76	86	54	18	-2											-2	2	4	0	10	2	6	6	10	4	8	64	422	4.4%
20-Aug	54	28	82	60	18	4											0	0	0	0	0	6	8	4	0	16	4	4	288	3.0%
21-Aug	44	76	110	62	48	58											-2	0	0	2	8	0	0	0	2	10	6	62	486	5.1%

- continued -

Table 10. (Page 3 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
22-Aug	100	150	102	64	52	18	-12	-42	0	-28	-8	0	2	0	0	2	2	0	0	6	2	22	2	48	482	5.0%	
23-Aug																											0.0%
24-Aug	74	74	44	32	14	-2							0	0	0	0	2	0	56	30	4	2	32	112	474	5.0%	
25-Aug	104	40	34	28	68	16							-4	2	4	20	28	74	96	28	36	174	52	76	876	9.2%	
26-Aug	116	84	92	46	36	6							-14	-4	0	2	2	0	2	0	8	24	16	8	424	4.4%	
27-Aug	0	-46	22	18	-12	0							0	0	0	0	0	0	0	24	8	0	2	32	48	0.5%	
28-Aug	18	32	-6	30	0	-2							2	0	0	0	0	0	0	4	0	2	4	90	174	1.8%	
29-Aug	54	54	34	32	0	0	-2	-4	0	2	0	0	0	0	0	2	0	0	20	12	14	8	6	62	294	3.1%	
30-Aug																											0.0%
31-Aug																											0.0%
1-Sep																			0	-2	2	2	-2	2	2	0.0%	
2-Sep	16	4	-4	10	6	6							2	2	0	0	2	14	8	2	-2	0	4	2	72	0.8%	
3-Sep	-4	12	16	8	8	6							0	0	2		0	6	4	6	0	12	8	84	0.9%		
4-Sep	10	10	4	0	4	-2							-4	0	4	4	4	2	2	0	2	2	0	0	42	0.4%	
5-Sep	12	0	8	2	6	2	8	-8	0	0	0	2	4	4	2	6	2	4	0	4	0	6	0	12	76	0.8%	
6-Sep																											0.0%
7-Sep	10	8	2	4	6	4							-2	2	2	0	0	2	-2	-2	0	-4	4	10	44	0.5%	
8-Sep	0	2	0	0	2	-2							0	0	0	2	2	0	4	2	0	2	-4	0	10	0.1%	
9-Sep	0	2	0	0	4	-6							4	2	-2	0	-2	0	-2	6	0	0	4	2	12	0.1%	
10-Sep	4	-4	0	2	0	0							2	-2	0	-2	2	2	0	-2	4	6	0	-6	6	0.1%	
11-Sep	4	0	-4	0	-2	0							0	0	0	0	0	0	-4	2	0	0	-2	-6	-6	-0.1%	
12-Sep	12	-2	0	0	0	0	-2	2	0	0	0	0	0	0	0	0	2	0	0	2	2	0	2	18	0.2%		
13-Sep																											
End of counting season																											
Total	1,906	1,446	1,250	668	410	250	0	-26	8	-26	8	14	16	34	62	88	104	168	306	320	260	564	520	1,206	9,556		

Table 11. Reported hourly Dolly Varden observations at the Niukluk River counting tower, Norton Sound, 1996.

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
23-Jun														0	0	2	0	0	0	0	6	-2	0	0	2	8	0.3%
24-Jun	0	0	2	0	0	0								0	0	2	0	0	-2	0	0	2	4	0	6	14	0.4%
25-Jun	0	0	0	0	0	0								2	0	0	0	0	0	4	4	8	2	2	4	26	0.8%
26-Jun	0	0	0	0	0	2	0							0	0	0	0	0	0	0	2	0	0	4	0	8	0.3%
27-Jun																										0.0%	
28-Jun	0	0	0	0	0	0	0	2	-2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0.1%	
29-Jun	0	0	0	0	0	0								0	2	0	0	0	0	0	2	2	0	2	0	8	0.3%
30-Jun	0	0	0	0	0	0								2	0	0	0	0	0	0	0	2	4	0	0	8	0.3%
1-Jul	0	2	0	0	0	0								2	0	0	0	0	0	0	0	0	0	2	0	2	0.3%
2-Jul	2	0	0	0	2	0								0	0	0	0	0	0	0	0	4	0	4	0	12	0.4%
3-Jul	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2	0	0	0	2	10	0.3%
4-Jul																										0.0%	
5-Jul	0	0	0	0	0	0								0	0	0	2	0	0	4	0	0	0	0	0	6	0.2%
6-Jul	0	0	0	0	0	0								0	0	0	0	0	0	4	6	2	4	6	0	22	0.7%
7-Jul	6	0	0	0	0	4								2	-2	0	2	0	-2	0	4	10	4	0	4	32	1.0%
8-Jul	0	0	6	2	10	2								0	0	0	2	2	0	0	10	6	10	10	10	70	2.2%
9-Jul	2	6	0	0	12	0								0	0	0	0	2	0	4	18	26	42	30	12	154	4.9%
10-Jul	0	0	0	0	2	0	10	4	2	8	4	4	4	0	6	2	8	8	18	34	14	18	20	12	178	5.7%	
11-Jul																										0.0%	
12-Jul	6	0	0	0	0	0								0	0	0	0	4	0	2	6	2	0	2	2	24	0.8%
13-Jul	0	0	0	0	0	0								0	0	2	2	2	0	2	8	4	4	4	6	34	1.1%
14-Jul	0	0	0	0	0	0								0	0	4	0	0	0	4	12	6	8	4	8	46	1.5%
15-Jul	0	0	0	0	0	0								0	0	0	-2	0	0	2	4	0	4	0	2	10	0.3%
16-Jul	0	0	0	0	0	2								0	0	0	0	0	0	0	0	0	2	0	0	4	0.1%
17-Jul	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0.1%	
18-Jul																										0.0%	
19-Jul	6	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	6	0.2%
20-Jul	2	0	0	0	0	0								0	0	0	0	0	0	0	0	0	0	0	0	2	0.1%
21-Jul	0	0	0	0	0	0								0	0	0	0	0	0	0	0	4	0	0	2	6	0.2%
22-Jul	0	0	0	0	0	2								0	0	0	0	0	0	0	0	0	0	0	0	2	0.1%

- continued -

Table 11. (Page 2 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total												
23-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	6	0.2%											
24-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	4	0.1%											
25-Jul																										0.0%												
26-Jul																										0.0%												
27-Jul																										0.0%												
28-Jul																										0.0%												
29-Jul																										0.0%												
30-Jul																										0.0%												
31-Jul																										0.0%												
1-Aug																										0.0%												
2-Aug																										0.0%												
3-Aug																										0.0%												
4-Aug	2	0	0																							2	10	0.3%										
5-Aug	0	2	4	0																						6	4	12	0.4%									
6-Aug																										0	0	8	0.3%									
7-Aug	0	2	0	0	0	0																			0	2	0	2	6	0.2%								
8-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	6	4	0	0	0	18	0.6%											
9-Aug																										0	0	4	0.1%									
10-Aug	0	0	0	0	0	0																			0	2	0	2	6	0.2%								
11-Aug	0	0	0	0	0	0																			0	2	0	2	8	0.3%								
12-Aug	0	0	0	0	0	0																			2	0	0	0	8	0.3%								
13-Aug	0	0	0	0	0	0																			0	0	0	0	4	0.1%								
14-Aug	2	0	0	0	0	0																			0	2	0	0	4	0.1%								
15-Aug	4	0	0	2	0	0	0	4	0	2	2	6	2	0	-2	2	0	0	0	4	0	2	0	2	30	1.0%												
16-Aug																										0	0	0	0	0	0.0%							
17-Aug	2	4	2	0	2	2																			0	0	2	0	6	1.5%								
18-Aug	0	0	4	0	0	0																			2	0	4	0	6	68	2.2%							
19-Aug	6	12	8	4	4	4																			6	10	-2	8	4	24	7.2%							
20-Aug	10	10	14	6	12	12																			4	4	4	8	16	130	4.2%							
21-Aug	20	8	16	30	4	8																			6	2	4	2	30	38	6	0	-2	8	32	66	278	8.9%

- continued -

Table 11. (Page 3 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
22-Aug	40	12	6	18	14	16	-12	-6	0	-10	0	0	0	6	2	4	0	0	0	0	0	16	36	18	160	5.1%	
23-Aug																											0.0%
24-Aug	52	10	12	12	10	12								10	-8	2	4	2	8	2	6	4	2	16	12	168	5.4%
25-Aug	24	20	2	10	30	16								10	2	16	14	76	26	6	2	4	6	8	18	290	9.3%
26-Aug	34	4	16	14	12	10								2	2	0	0	0	0	0	0	0	0	0	2	96	3.1%
27-Aug	8	8	0	-2	8	2								2	-2	0	0	0	0	0	2	4	2	2	0	34	1.1%
28-Aug	6	4	6	6	-2	2								6	4	10	0	0	14	0	0	0	0	0	0	56	1.8%
29-Aug	2	2	4	14	8	0	0	4	0	0	0	0	0	0	0	2	-2	2	6	4	2	0	2	18	68	2.2%	
30-Aug																											0.0%
31-Aug																											0.0%
1-Sep																											0.6%
2-Sep	14	8	2	2	2	0								2	4	-2	2	2	-4	0	4	0	0	0	0	36	1.2%
3-Sep	8	4	10	2	0	10								0	0	0			0	4	24	10	10	32	14	128	4.1%
4-Sep	24	14	12	6	14	8								0	0	0	8	4	2	2	2	6	-2	20	4	124	4.0%
5-Sep	16	8	26	14	12	6	4	10	2	4	0	0	0	0	0	2	0	0	0	2	0	4	20	32	162	5.2%	
6-Sep																											0.0%
7-Sep	10	20	10	2	8	4								0	0	0	0	0	0	0	4	2	4	12	14	90	2.9%
8-Sep	6	2	10	2	6	0								0	0	0	0	0	0	0	0	0	0	0	0	26	0.8%
9-Sep	2	4	0	6	0	0								0	0	0	0	0	0	0	0	0	4	2	6	24	0.8%
10-Sep	8	0	6	0	0	0								0	0	0	0	0	0	0	0	0	0	2	10	26	0.8%
11-Sep	4	4	-2	-4	0	2								0	0	0	0	0	0	0	0	2	6	4	2	18	0.6%
12-Sep	4	4	0	6	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	18	0.6%	
13-Sep																											
Total	334	174	176	152	172	128	2	18	2	4	6	10	68	26	54	68	140	120	92	194	148	260	346	428	3,122		

End of counting season

Table 12. Age, sex and length composition of chum salmon carcass samples, Niukluk River, Norton Sound, 1996.

	<u>Brood Year and (Age Group)</u>					
	1993 (0.2)	1992 (0.3)	1991 (0.4)	1990 (0.5)	1989 (0.6)	Total
Stratum Dates:						
Sampling Dates:	7/14-9/10/96					
Sample Size:		363				
Female	Percent of Sample	0.3%	17.1%	23.1%	4.7%	0.0% 45.2%
	Number in Sample	1	62	84	17	0 164
	Mean length (mm) ^a	535.0	551.6	566.5	571.2	
Male	Percent of Sample	0.3%	15.7%	30.0%	8.3%	0.6% 54.8%
	Number in Sample	1	57	109	30	2 199
	Mean length (mm) ^a	625.0	590.0	617.1	610.0	642.5
Total	Percent of Sample	0.6%	32.8%	53.2%	12.9%	0.6% 100.0%
	Number in Sample	2	119	193	47	2 363

^a Length was from mid-eye to fork of tail.

Table 13. Chum salmon escapement age and sex composition, Niukluk River counting tower, Norton Sound, 1996.

Sampling Dates: 7/14-9/10/96

Sample Size: 363 chum salmon

Escapement: 80,121 chum salmon

<u>Brood Year and (Age Group)</u>						
		1993 (0.2)	1992 (0.3)	1991 (0.4)	1990 (0.5)	1989 (0.6) Total
Female chum	% of Sample	0.3%	17.1%	23.1%	4.7%	0.0% 45.2%
	# in Escapement	221	13,685	18,540	3,752	0 36,198
Male chum	% of Sample	0.3%	15.7%	30.0%	8.3%	0.6% 54.8%
	# in Escapement	221	12,581	24,058	6,622	441 43,923
Totals	% of Sample	0.6%	32.8%	53.2%	12.9%	0.6% 100.0%
	# in Escapement	441	26,266	42,599	10,374	441 80,121

Table 14. Age and sex composition, and mean length of rod & reel caught coho salmon samples, Niukluk River, Norton Sound, 1996.

		Brood Year and (Age Group)			
		1993 (1.1)	1992 (2.1)	1991 (3.1)	Total
Stratum Dates:					
Sampling Dates:	7/14-9/10/96				
Sample Size:	202				
Female	Percent of Sample	1.5%	44.6%	1.0%	47.0%
	Number in Sample	3	90	2	95
	Mean length (mm) ^a	568.3	609.4	562.5	
Male	Percent of Sample	7.9%	44.1%	1.0%	53.0%
	Number in Sample	16	89	2	107
	Mean length (mm) ^a	600.3	621.9	610.0	
Total	Percent of Sample	9.4%	88.6%	2.0%	100.0%
	Number in Sample	19	179	4	202

^a Length was from mid-eye to fork of tail.

Table 15. Age and sex composition, and mean length of coho salmon carcass samples, Niukluk River, Norton Sound, 1996.

		Brood Year and (Age Group)			
		1993 (1.1)	1992 (2.1)	1991 (3.1)	Total
Stratum Dates:					
Sampling Dates:	7/14-9/10/96				
Sample Size:	209				
Female	Percent of Sample	3.8%	33.5%	0.0%	37.3%
	Number in Sample	8	70	0	78
	Mean length (mm) ^a	595.6	602.2		
Male	Percent of Sample	7.2%	53.6%	1.9%	62.7%
	Number in Sample	15	112	4	131
	Mean length (mm) ^a	629.1	623.3	627.5	
Total	Percent of Sample	11.0%	87.1%	1.9%	100.0%
	Number in Sample	23	182	4	209

^a Length was from mid-eye to fork of tail.

Table 16. Size composition estimates of coho salmon sampled from the Niukluk River, Norton Sound, 1996.

Upper Bound of 25mm Mid-eye to Fork Length Categories	Rod & Reel Caught Females			Carcass Females			All Males		
	Number	Proportion	Standard Error [P]	Number	Proportion	Standard Error [P]	Number	Proportion	Standard Error [P]
450	0	0.000	0.000	0	0.000	0.000	1	0.004	0.004
475	0	0.000	0.000	0	0.000	0.000	1	0.004	0.004
500	0	0.000	0.000	1	0.012	0.012	1	0.004	0.004
525	1	0.009	0.009	3	0.035	0.020	0	0.000	0.000
550	0	0.000	0.000	4	0.047	0.023	2	0.007	0.005
575	14	0.128	0.032	7	0.081	0.030	17	0.061	0.014
600	34	0.312	0.045	26	0.302	0.050	42	0.151	0.022
625	29	0.266	0.043	39	0.453	0.054	90	0.324	0.028
650	27	0.248	0.042	6	0.070	0.028	89	0.320	0.028
675	4	0.037	0.018	0	0.000	0.000	31	0.112	0.019
700	0	0.000	0.000	0	0.000	0.000	3	0.011	0.006
725	0	0.000	0.000	0	0.000	0.000	1	0.004	0.004
Totals	109	1.000		86	1.000		278	1.000	

Table 17. Niukluk River counting tower climatological and stream observations, Norton Sound 1996.

Date	Time	Air Temp °C	Water Temp °C	% Cloud Cover	Water Gauge	Water Visibility	Remarks
20-Jun	1915	16	11	60%		Good	Drizzle
21-Jun	1800	18	12	40%		Good	
22-Jun	1930	15	12	95%	25.50	Good	
23-Jun	1230	14	11	10%	23.25	Good	
24-Jun	1530	16	12	95%	24.00	Good	Raining
25-Jun	1530	15	12	90%	26.25	Good	
26-Jun	1530	9	10	100%	24.25	Good	Raining
27-Jun	1500	17	9	20%	23.00	Good	NW wind to 20
28-Jun	1630	15	11	5%	21.00	Good	
29-Jun	1530	14	11	75%	20.00	Good	Rain in am
30-Jun	1630	12	12	80%	19.50	Good	
1-Jul	1630	11	11	98%	19.25	Good	
2-Jul	1530	9	11	100%	19.00	Good	Light rain & drizzle
3-Jul	1500	18	11	95%	19.25	Good	
4-Jul	1600	18	12	50%	19.00	Good	
5-Jul	1600	26	15	50%	18.75	Good	
6-Jul	1530	18	15	20%	18.75	Good	
7-Jul	1530	24	16	35%	18.50	Good	
8-Jul	1630	27	17	35%	18.25	Good	
9-Jul	1530	26	17	20%	18.25	Good	
10-Jul	1600	20	17	10%	18.00	Good	Light rain & drizzle
11-Jul	1530	24	17	50%	18.00	Good	
12-Jul	1530	16	14	95%	17.75	Good	Rain
13-Jul	1630	17	14	80%	18.00	Good	Light rain & drizzle
14-Jul	1530	17	14	80%	19.50	Good	
15-Jul	1530	13	14	98%	19.75	Good	
16-Jul	1530	18	14	80%	19.00	Good	
17-Jul	1630	14	14	100%	18.50	Good	Intermittent Rain
18-Jul	1330	17	13	100%	18.75	Good	
19-Jul	1630	19	15	50%	18.00	Good	
20-Jul	2030	13	15	100%	17.25	Good	
21-Jul	1630	11	13	100%	17.00	Good	
22-Jul	1530	13	13	100%	17.25	Good	Light rain & drizzle
23-Jul	1530	14	13	95%	17.25	Good	S wind to 30 & Rain
24-Jul	1530	12	12	100%	18.25	Good	Rain
25-Jul	1800	10	11	100%	24.25	Good	Continuous rain
26-Jul	1500	9	10	100%	49.00	Very poor	Continuous rain
27-Jul	1530	9	11	100%	34.00	Poor	Light rain & drizzle
28-Jul	1530	11	11	100%	29.00	Poor	
29-Jul	1630	12	11	100%	25.25	OK	Light rain & drizzle
30-Jul	1630	15	12	5%	23.00	Good	
31-Jul	1630	12	11	100%	22.25	Good	

- continued -

Table 17. (Page 2 of 2).

Date	Time	Air Temp °C	Water Temp °C	% Cloud Cover	Water Gauge	Water Visibility	Remarks
1-Aug	1630	10	11	100%	23.75	Good	Light rain
2-Aug	1630	9	9	100%	27.00	OK	Intermittent rain
3-Aug	1530	9	9	100%	27.00	OK	
4-Aug	1630	11	9	100%	24.00	Good	
5-Aug	1630	11	10	100%	23.50	Good	Rain at night
6-Aug	1630	11	11	90%	23.50	Good	
7-Aug	1630	9	8	100%	22.00	Good	Frost in morning
8-Aug	1630	12	9	100%	23.50	Good	Intermittent rain
9-Aug	1600	12	10	90%	23.00	Good	
10-Aug	1630	12	9	0%	22.00	Good	NW wind to 20
11-Aug	1630	16	11	0%	21.00	Good	
12-Aug	1630	17	11	5%	21.00	Good	
13-Aug	1630	11	11	100%	20.50	Good	Light rain & drizzle
14-Aug	1700	14	10	100%	20.00	Good	Light rain & drizzle
15-Aug	1630	13	11	100%	25.00	Good	Rain all night
16-Aug	1630	13	11	95%	26.00	Good	
17-Aug	1630	18	12	30%	24.25	Good	
18-Aug	1630	17	12	0%	23.00	Good	
19-Aug	1630	17	12	100%	22.00	Good	
20-Aug	1630	22	13	35%	21.50	Good	
21-Aug	1630	20	13	25%	21.00	Good	
22-Aug	1630	11	11	0%	21.00	Good	
23-Aug	1630	17	10	0%	20.00	Good	
24-Aug	1630	13	10	100%	20.50	Good	Rain all day
25-Aug	1630	13	10	100%	23.50	Good	Rain
26-Aug	1630	7	8	5%	24.00	Good	
27-Aug	1630	11	8	50%	22.00	Good	
28-Aug	1630	12	8	100%	21.50	Good	Rain
29-Aug	1730	11	9	100%	22.50	Good	Rain heavy at times
30-Aug	1630	13	9	100%	34.00	Poor	
31-Aug	1800	13	10	90%	30.50	OK	
1-Sep	1800	11	9	100%	27.50	Good	
2-Sep	1730	12	9	70%	26.00	Good	
3-Sep	1715	19	10	0%	25.25	Good	
4-Sep	2000	20	11	0%	24.50	Good	
5-Sep	1800	19	11	0%	24.50	Good	
6-Sep	2000	15	11	0%	23.75	Good	
7-Sep	1700	20	10	0%	23.25	Good	
8-Sep	2000	9	8	0%	23.00	Good	
9-Sep	1900	7	7	50%	22.00	Good	
10-Sep	2000	5	6	80%	21.00	Good	
11-Sep	1630	6	6	50%	20.50	Good	
12-Sep	1830	6	6	90%	21.00	Good	
13-Sep	2100	4	5	100%	20.00	Good	

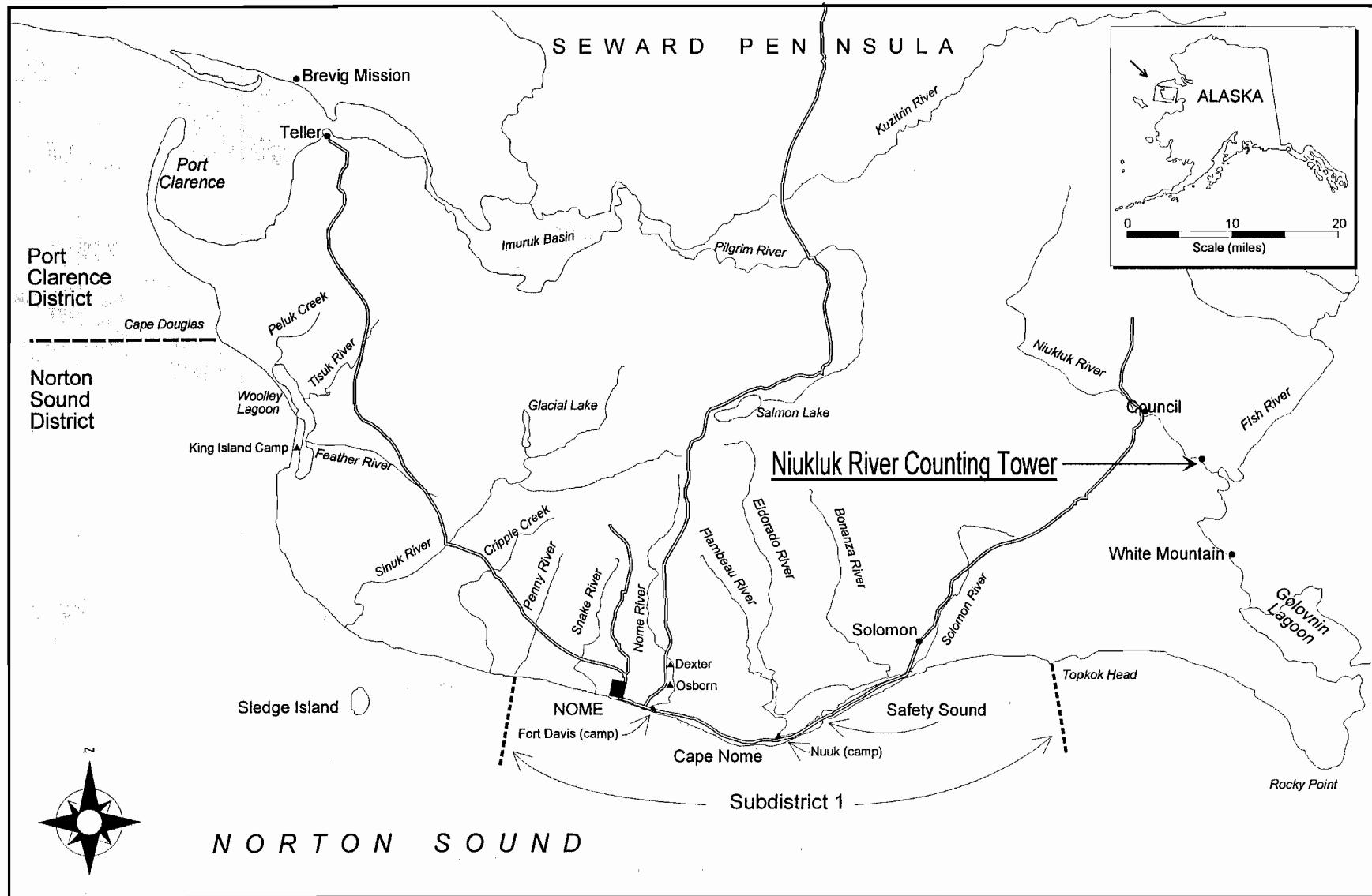


Figure 1. Area Location map of the Niukluk River counting tower project site, Norton Sound, 1996.

Figure 2. Niukluk River tower cumulative passage of all salmonid species, except pink salmon, Norton Sound 1996.

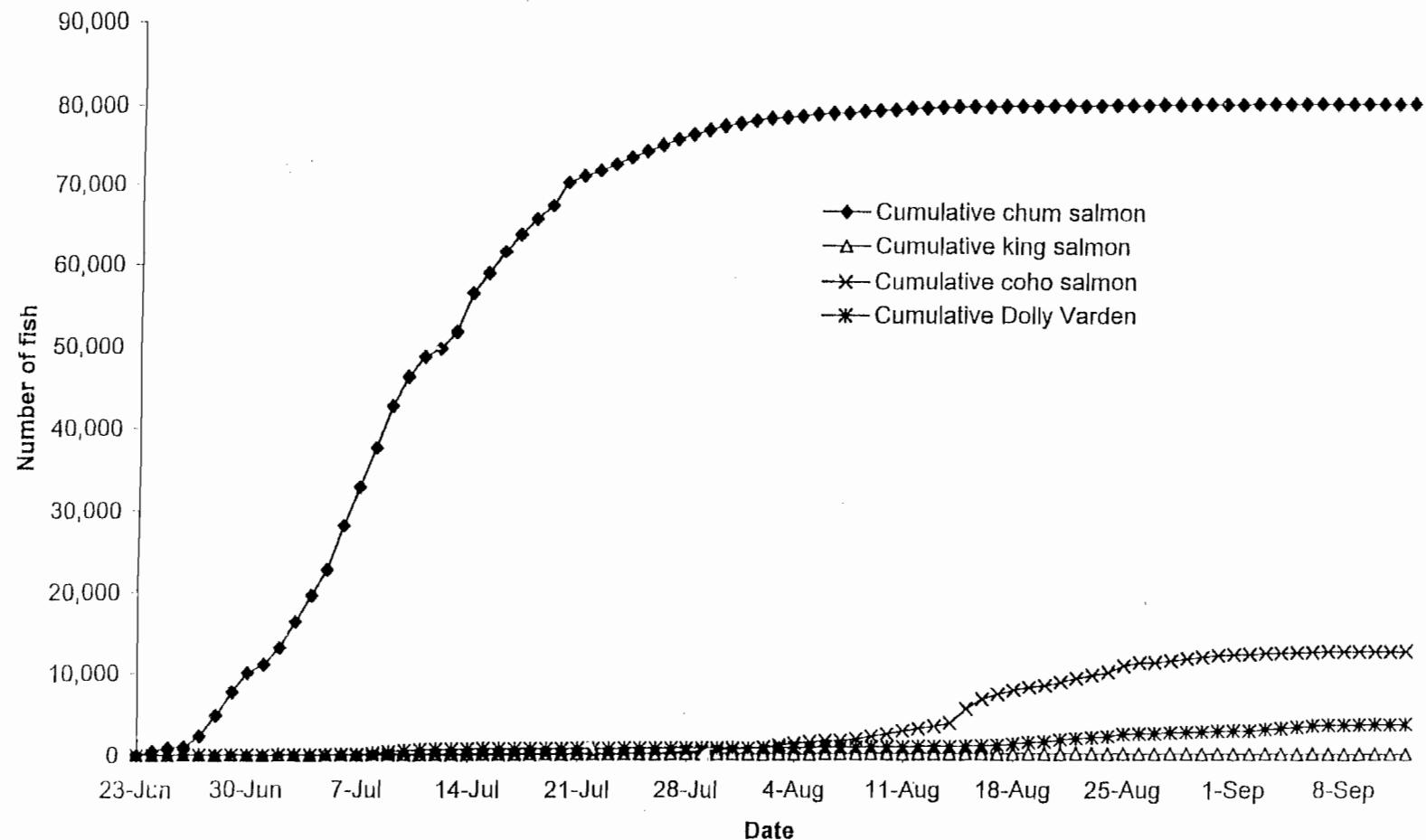


Figure 3. Daily chum salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

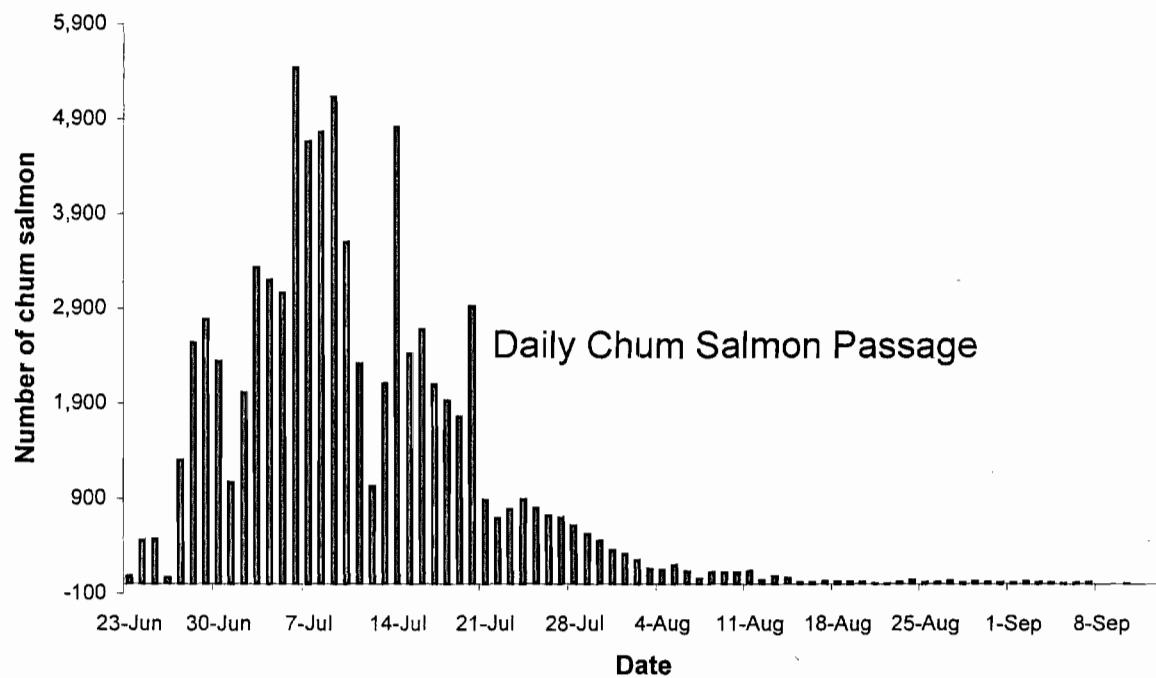


Figure 4. Cumulative chum salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

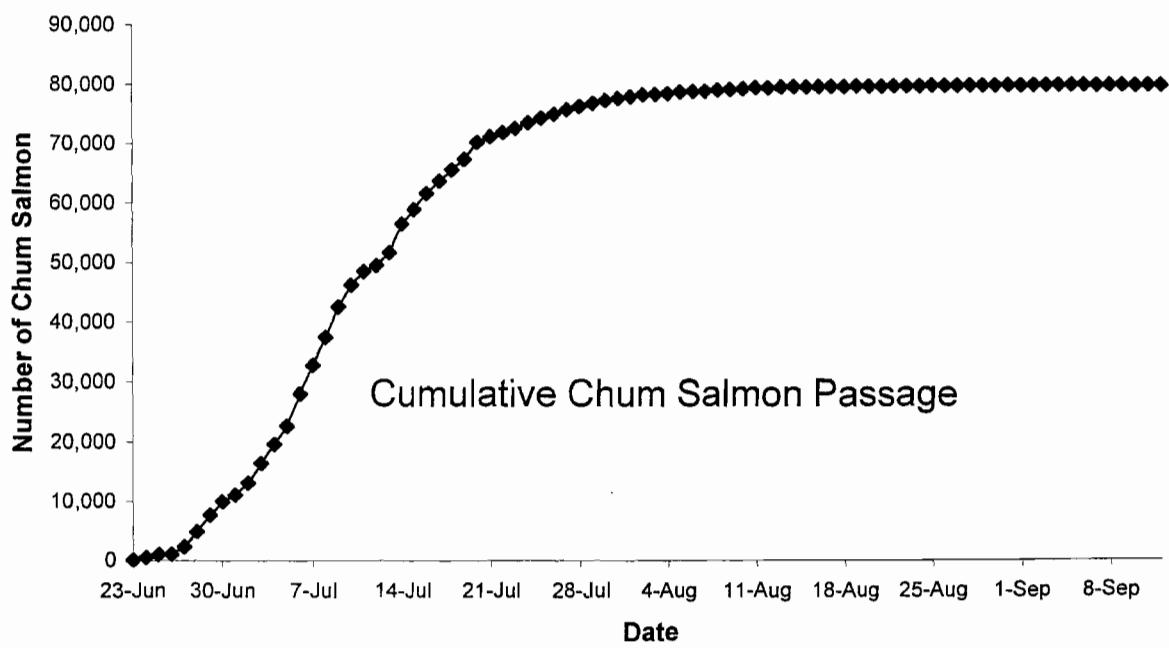


Figure 5. Daily pink salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

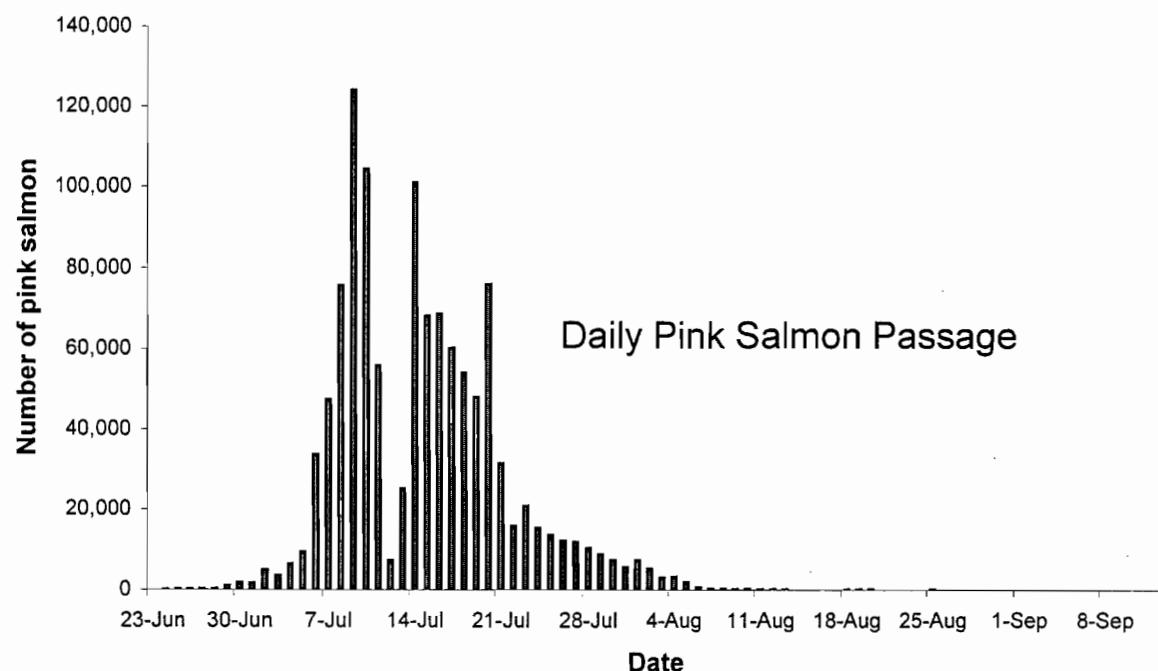


Figure 6. Cumulative pink salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

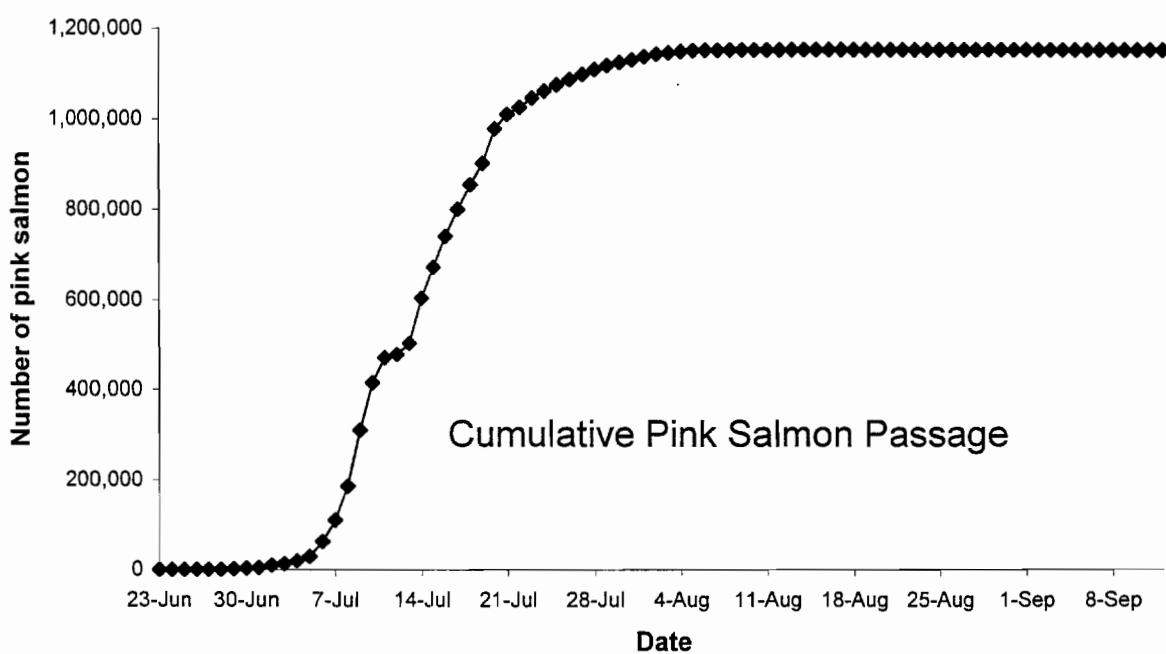


Figure 7. Daily king salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

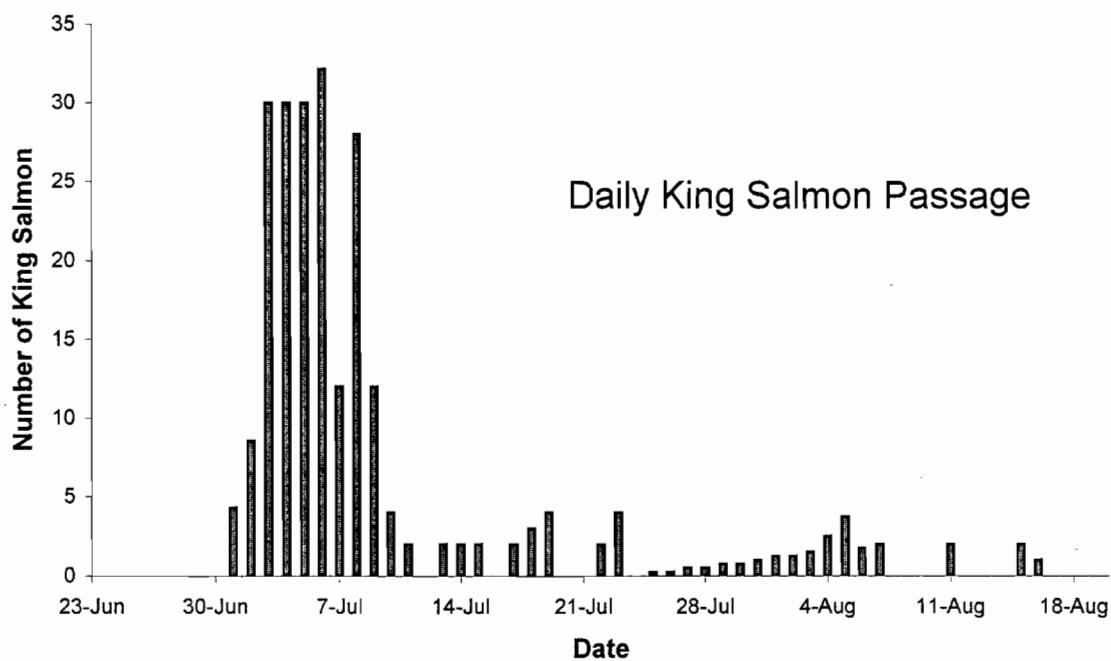


Figure 8. Cumulative king salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

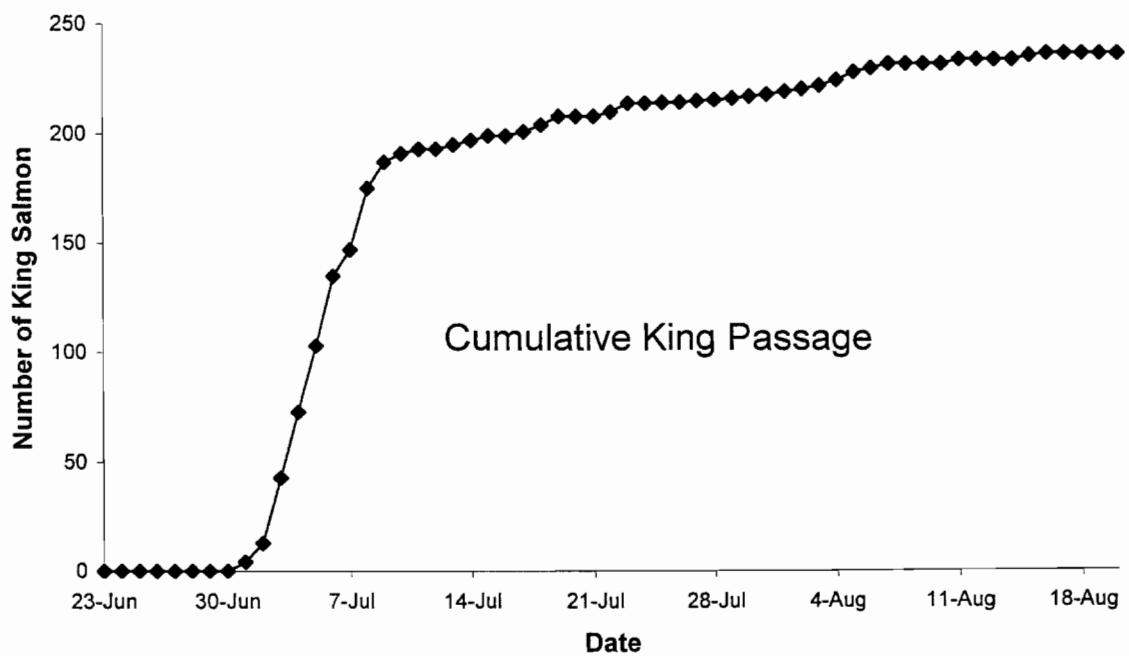


Figure 9. Daily coho salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

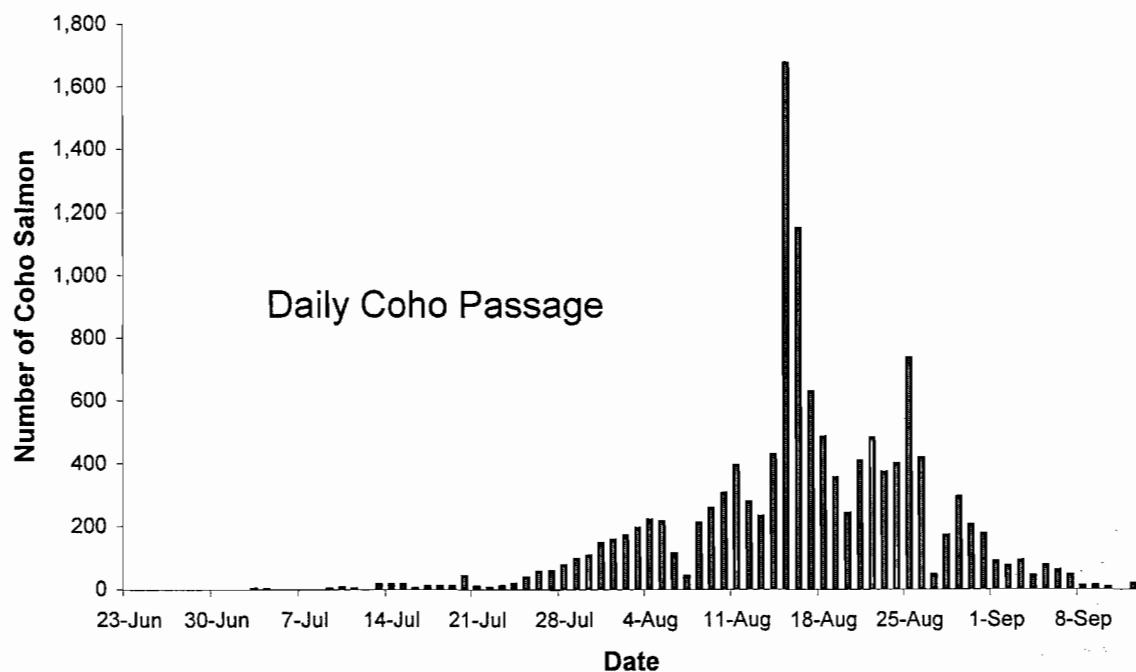


Figure 10. Cumulative coho salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

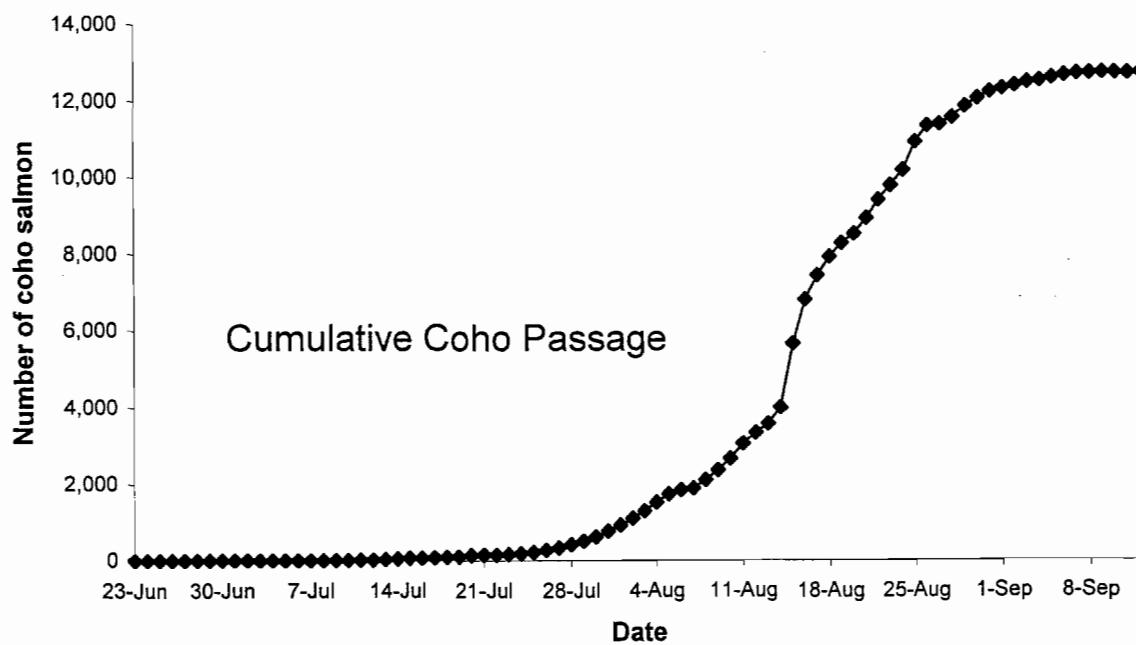


Figure 11. Daily Dolly Varden migration past the Niukluk River counting tower, Norton Sound, 1996.

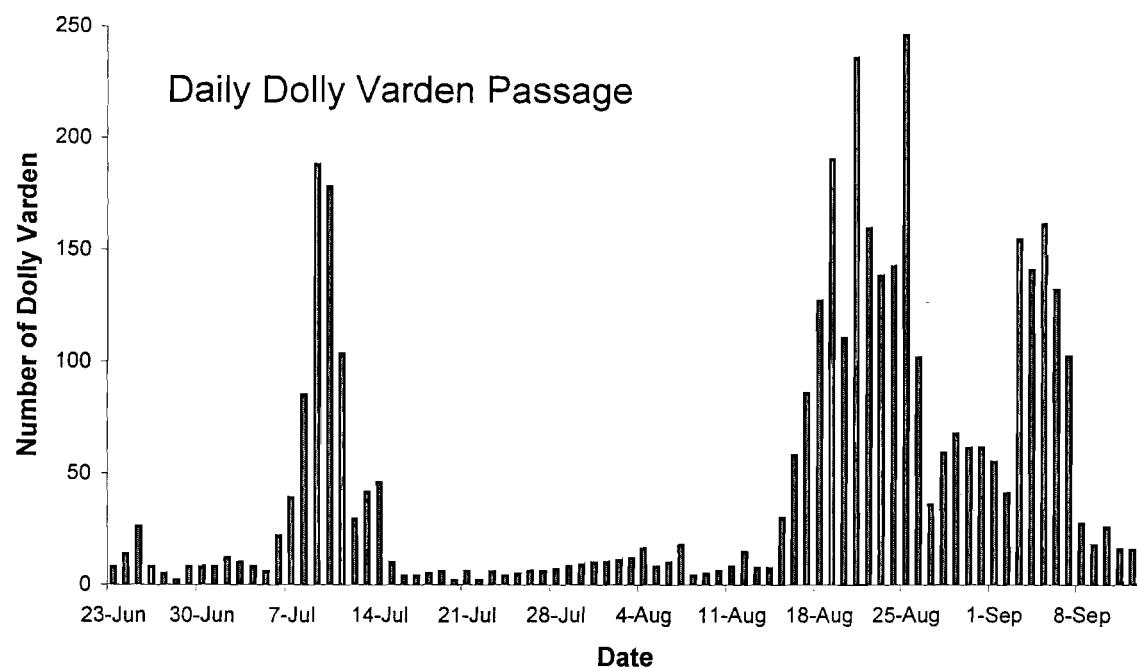


Figure 12. Cumulative Dolly Varden migration past the Niukluk River counting tower, Norton Sound, 1996.

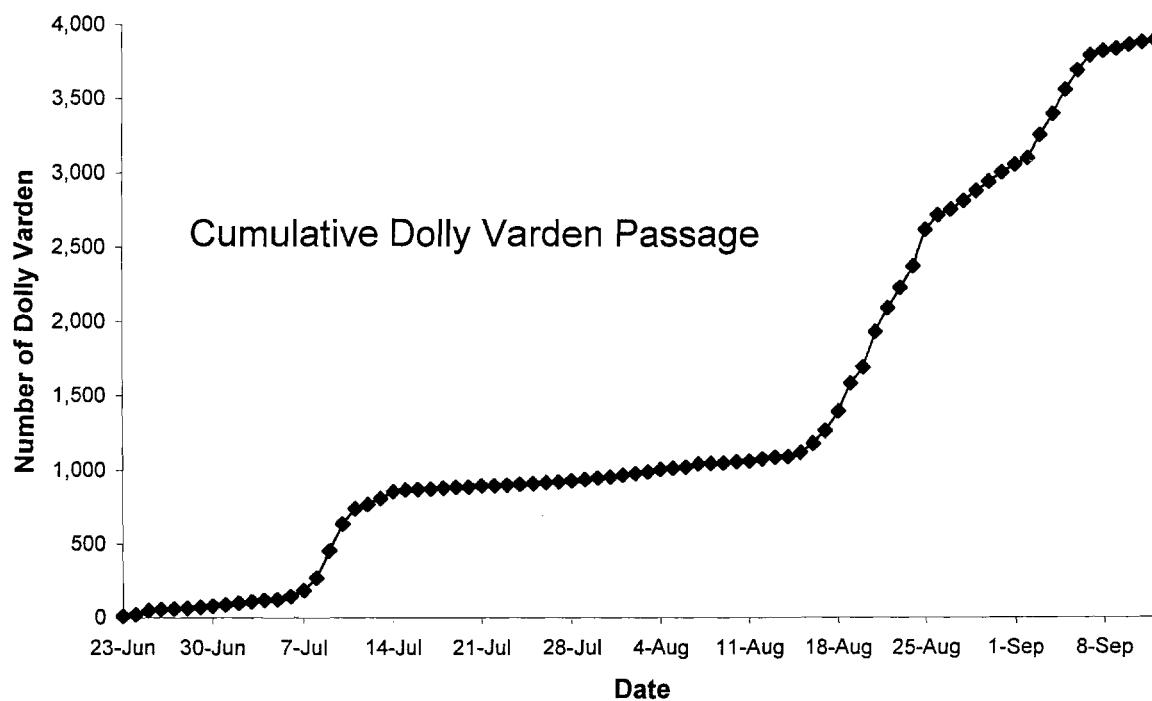


Figure 13. Diurnal pattern of chum salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

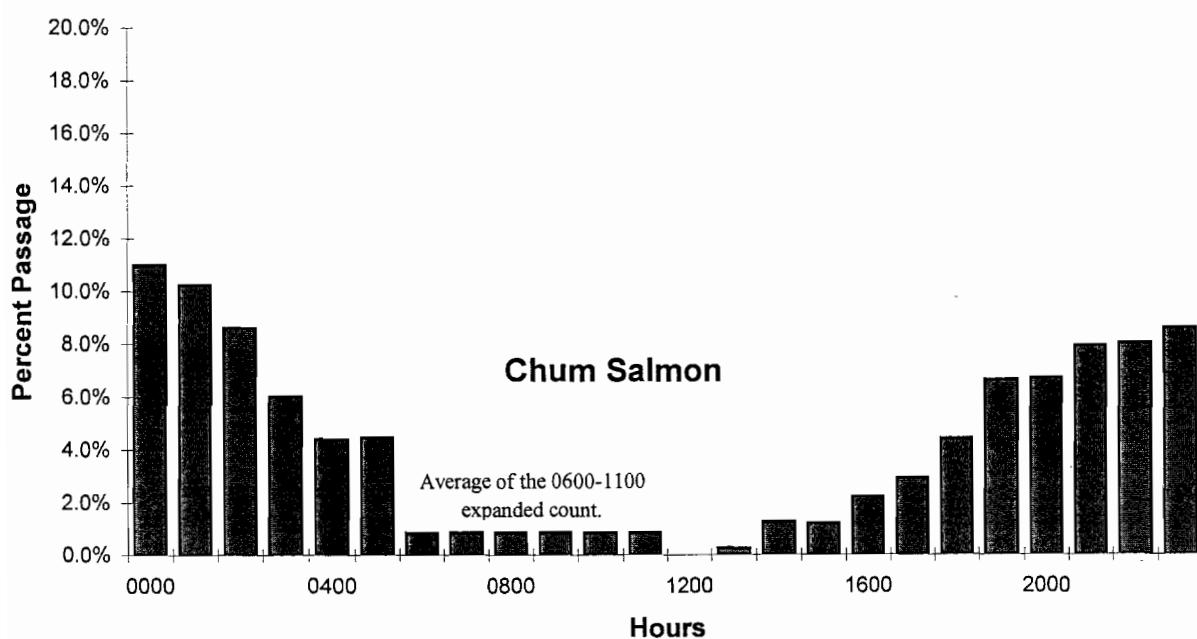


Figure 14. Diurnal pattern of pink salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

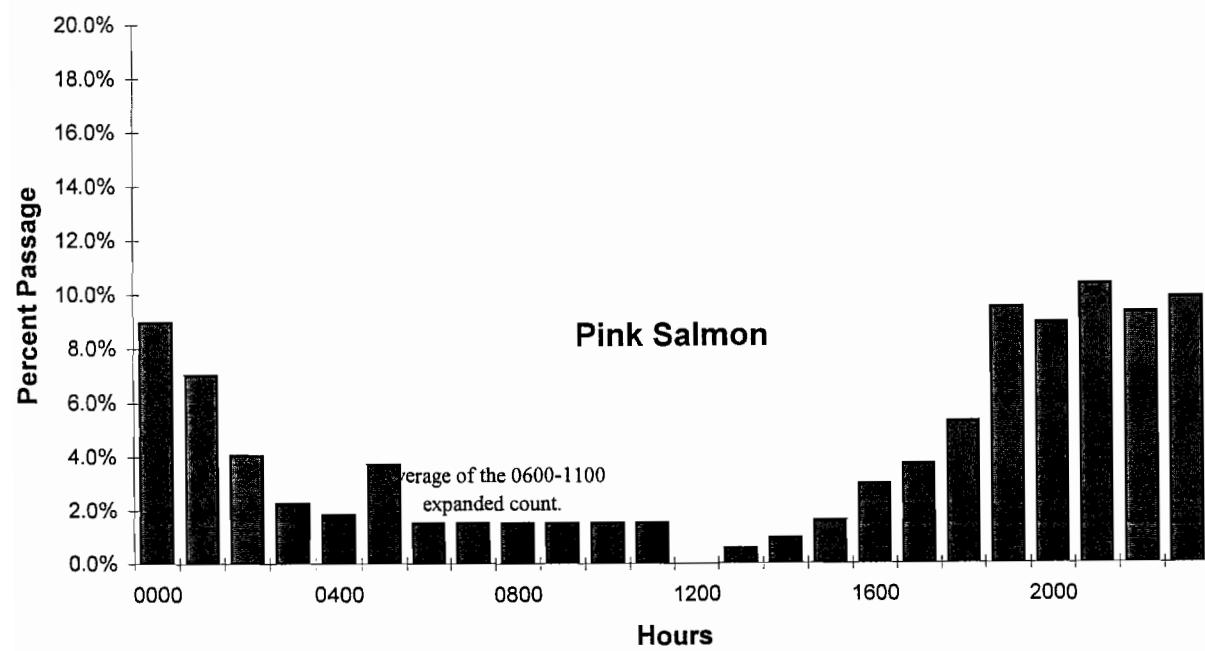


Figure 15. Diurnal pattern of king salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

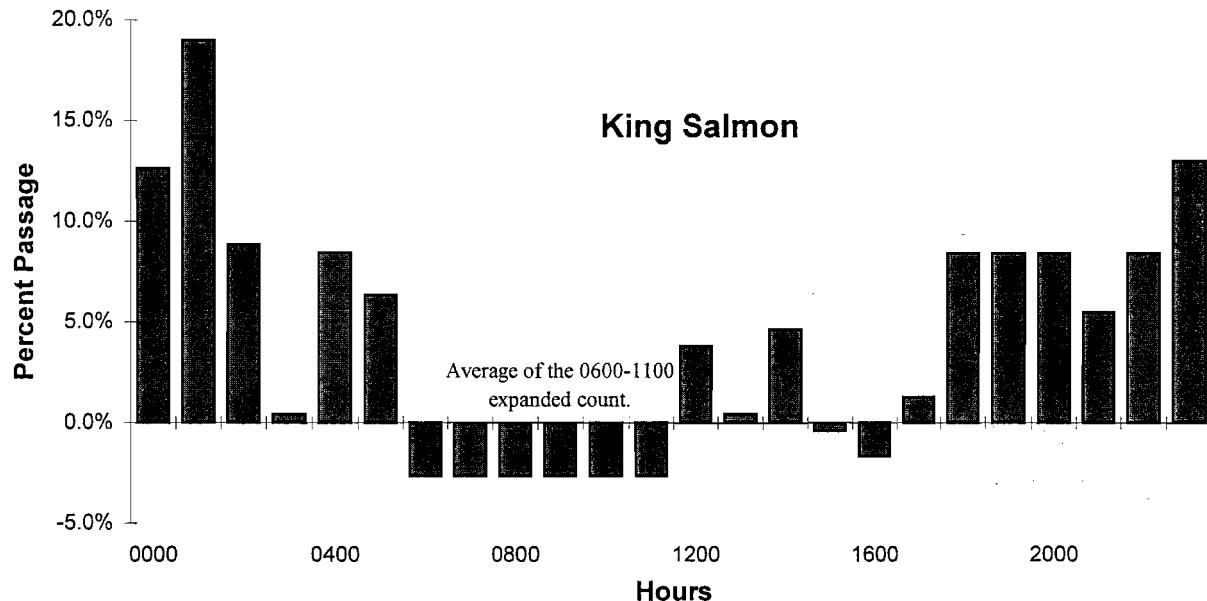


Figure 16. Diurnal pattern of coho salmon migration past the Niukluk River counting tower, Norton Sound, 1996.

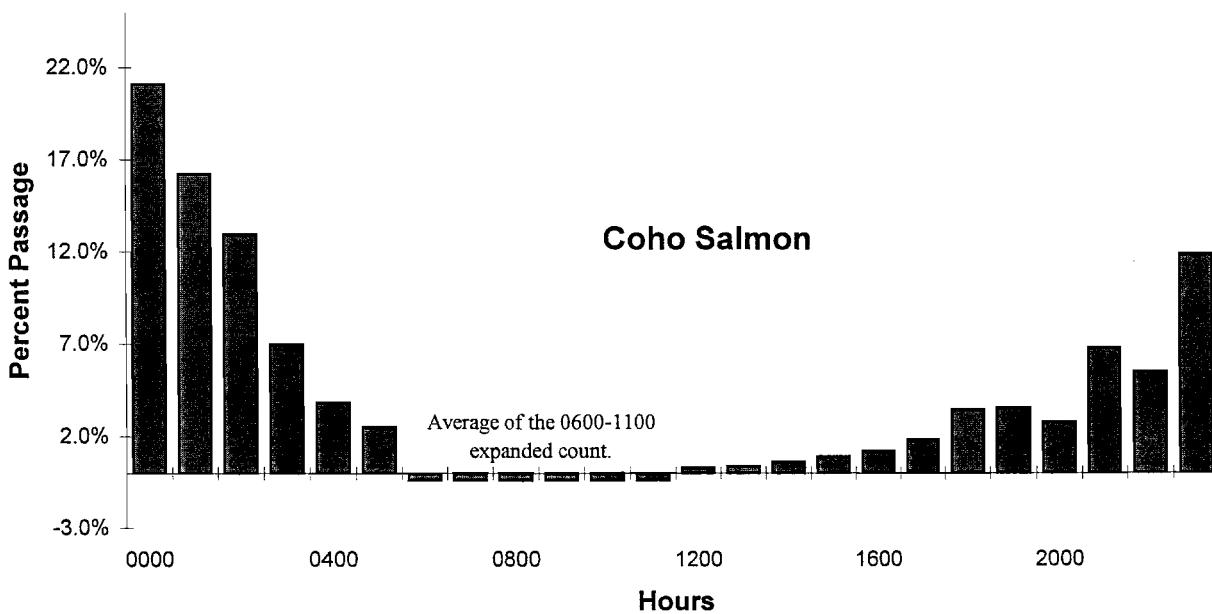


Figure 17. Diurnal pattern of Dolly Varden migration past the Niukluk River counting tower, Norton Sound, 1996.

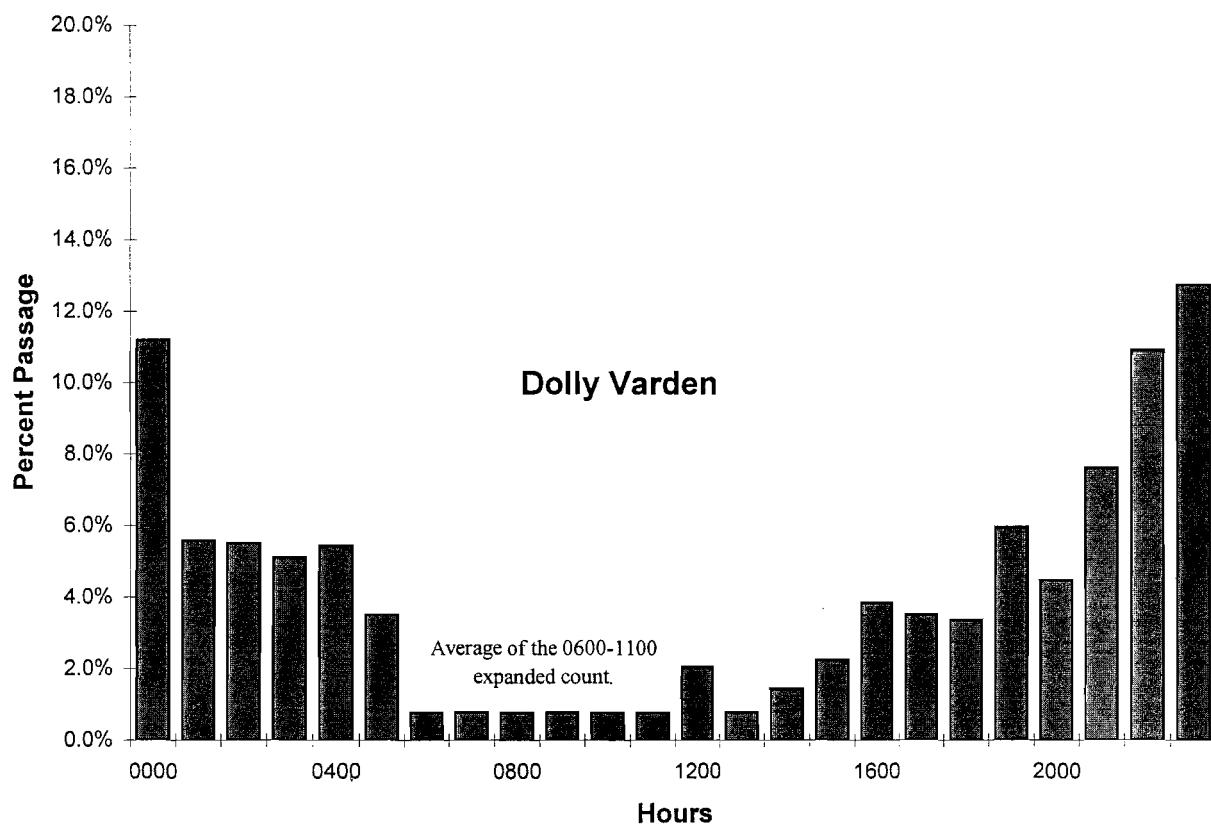


Figure 18. Cumulative length distributions of male and female coho salmon from combined rod & reel and carcass samples, Niukluk River, Norton Sound, 1996.

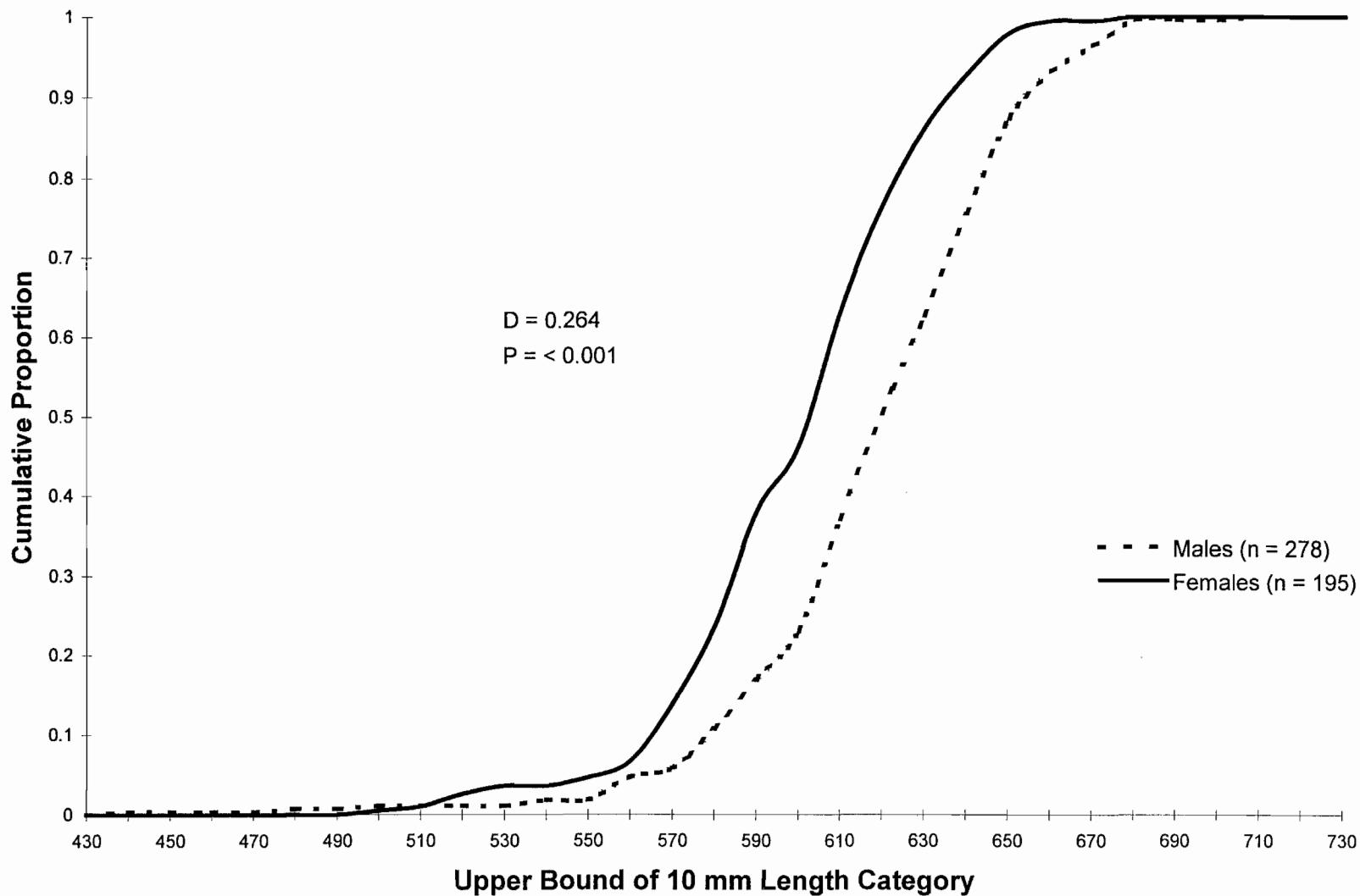


Figure 19. Comparison of the cumulative length distributions of rod and reel caught and carcasses of male coho salmon, Niukluk River, Norton Sound, 1996.

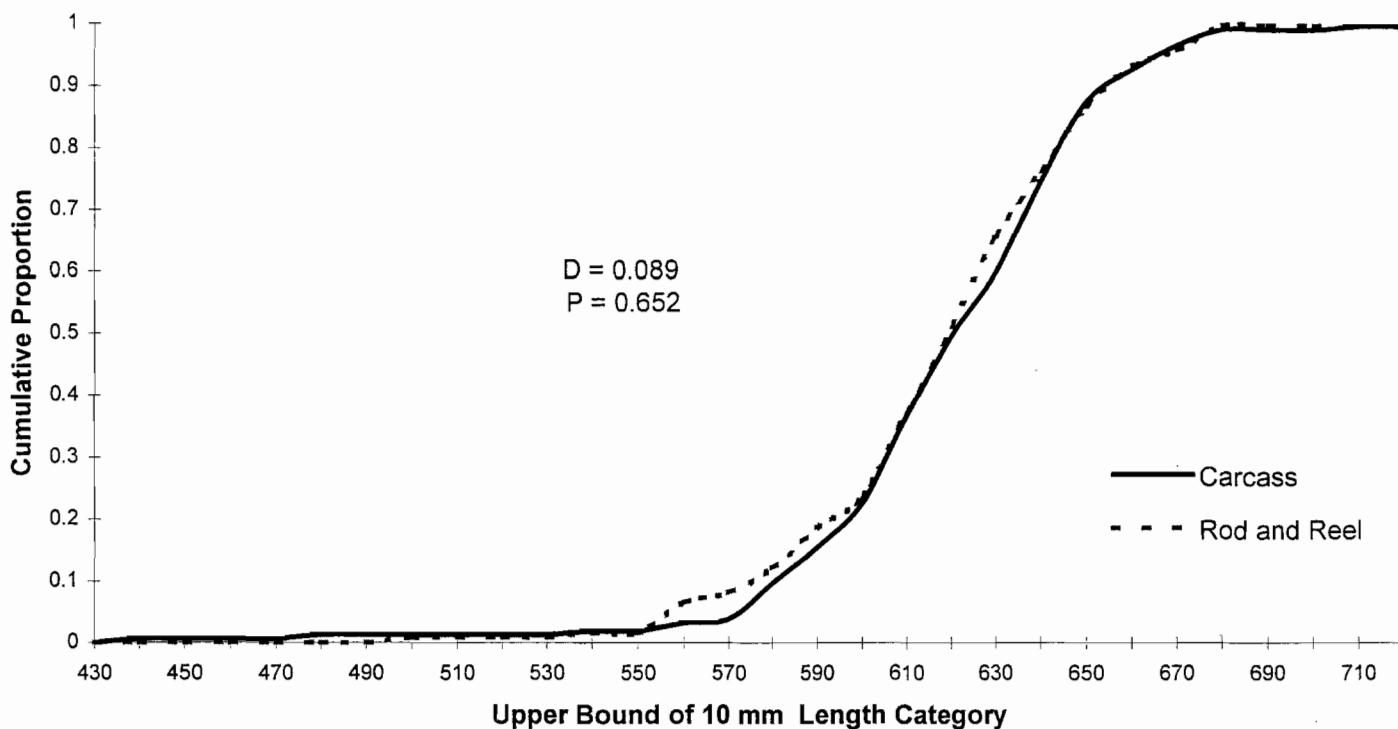


Figure 20. Comparison of the cumulative length distributions of rod and reel caught and carcasses of female coho salmon, Niukluk River, Norton Sound, 1996.

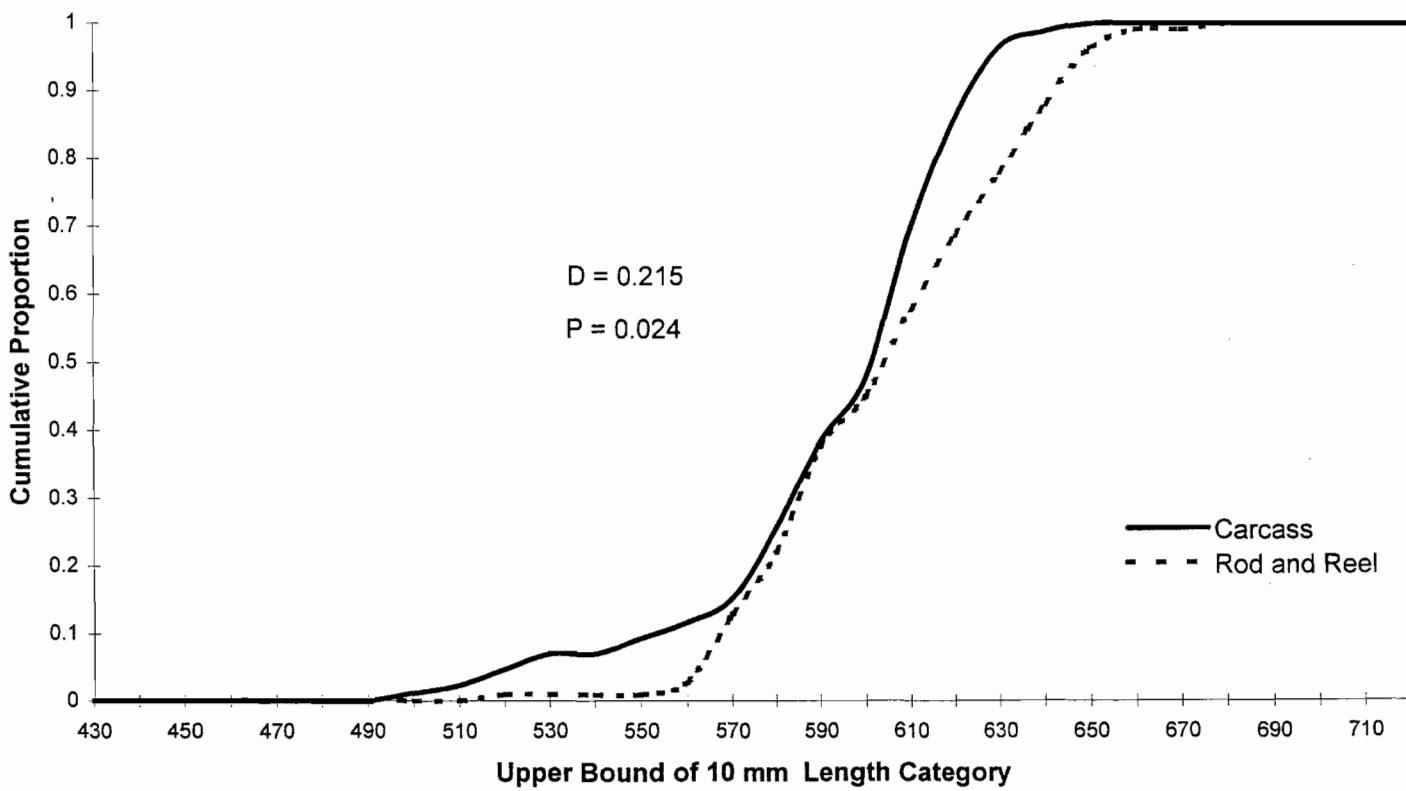


Figure 21. Comparison of the length distributions of male and female coho salmon from combined rod & reel and carcass samples, Niukluk River, Norton Sound, 1996.

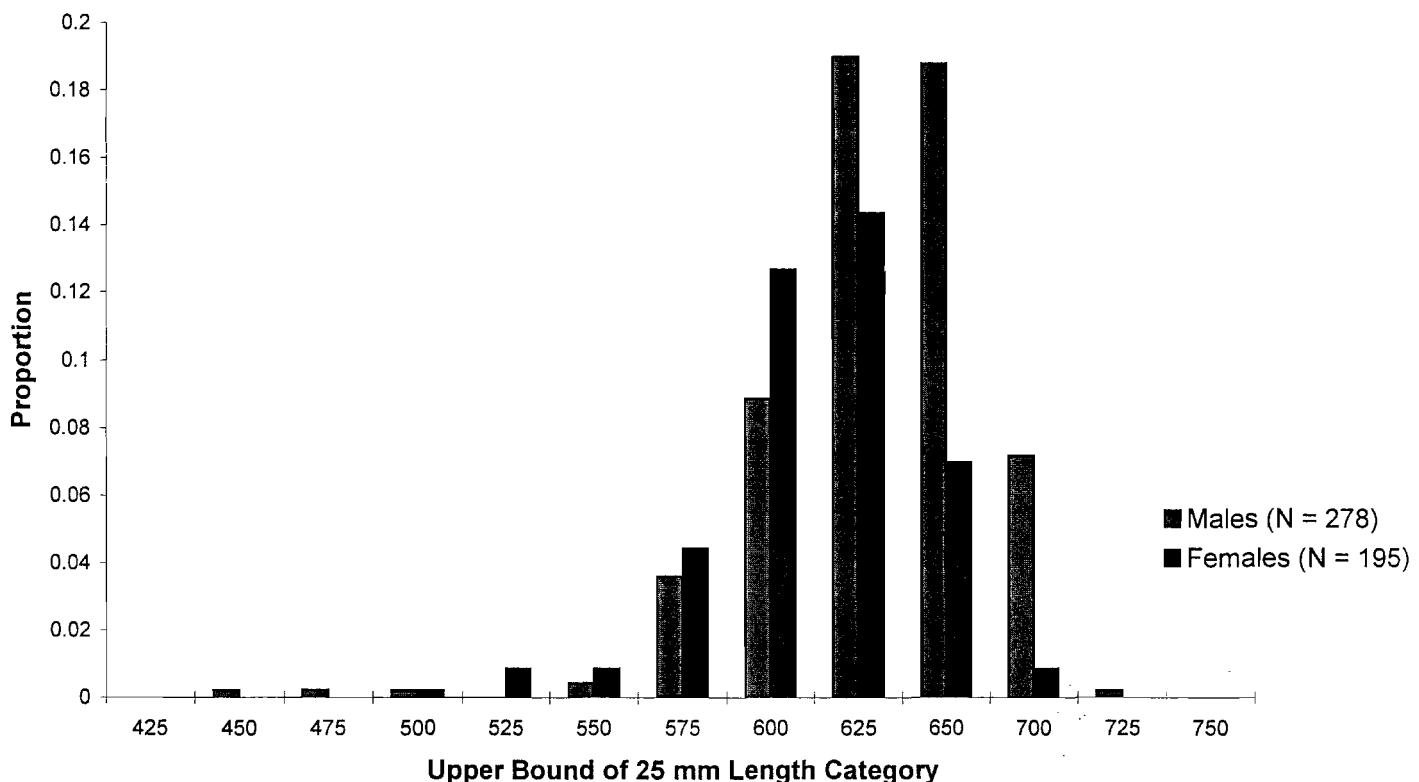


Figure 22. Estimated age composition of the coho salmon escapement, Niukluk River, Norton Sound, 1996.

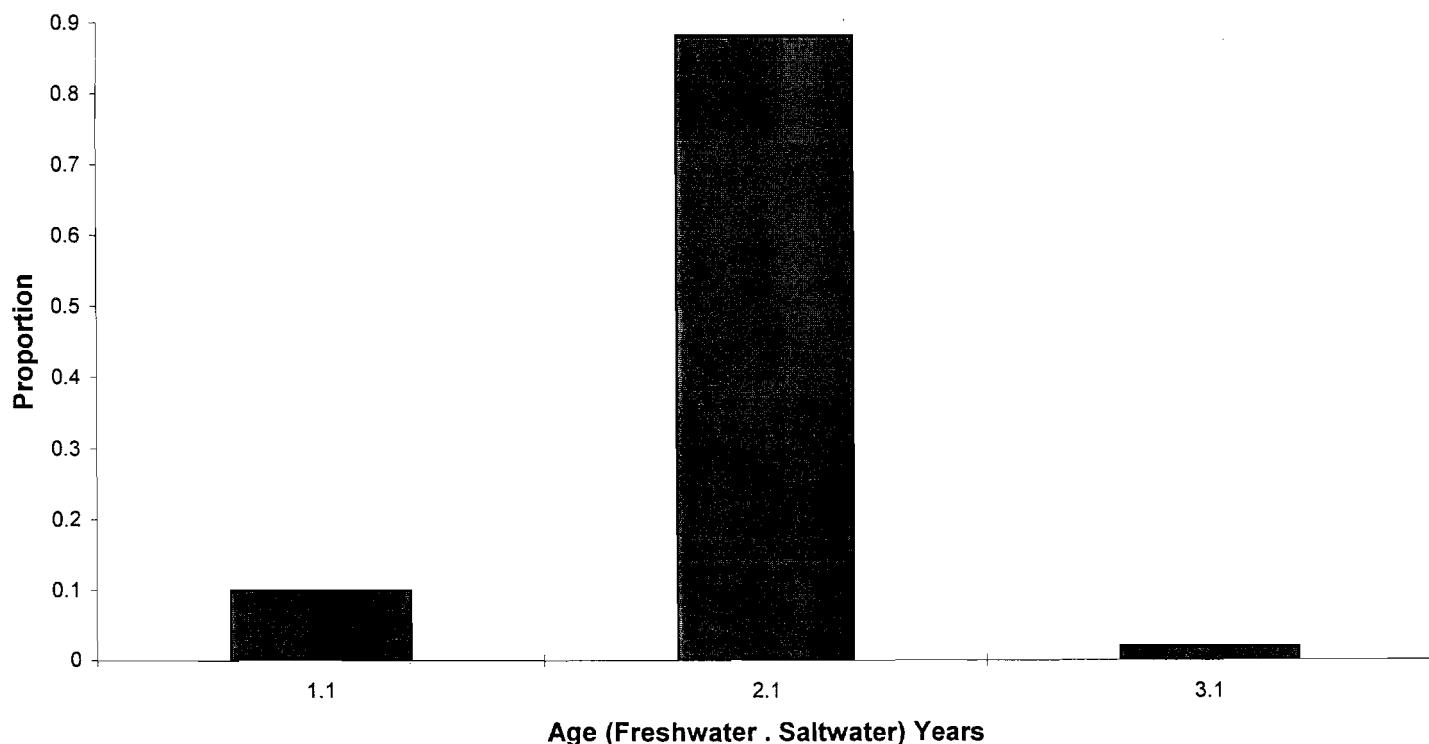


Figure 23. Chum salmon run-timing, Niukluk River counting tower, Norton Sound, 1995-1996.

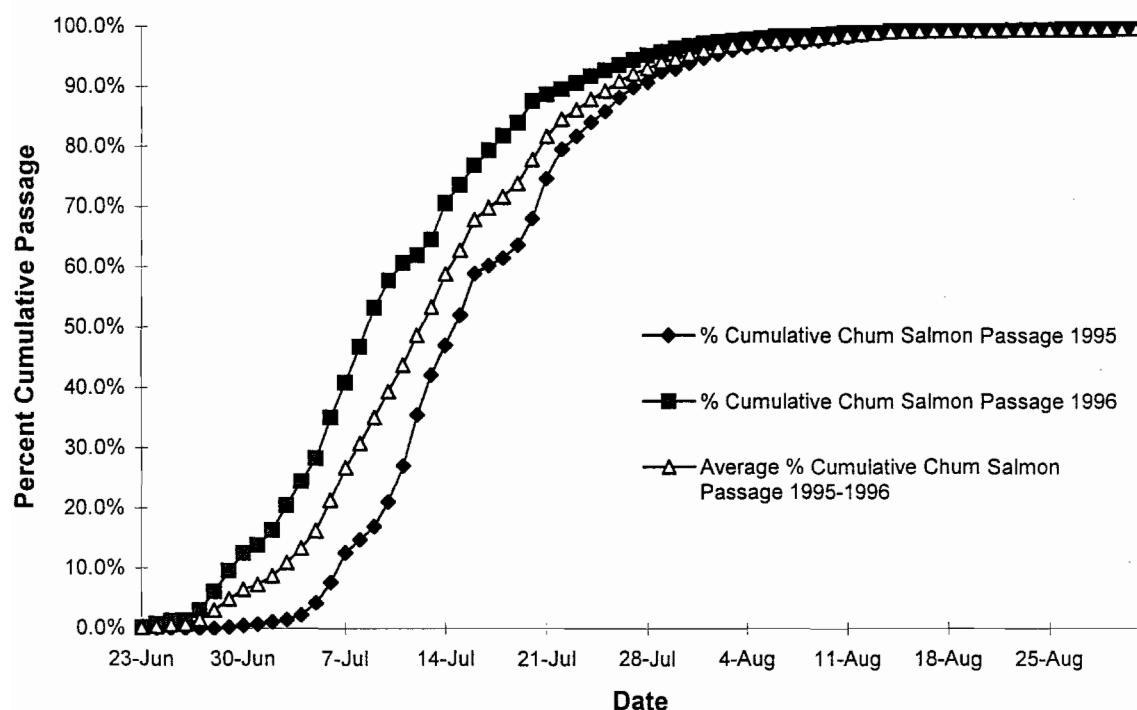


Figure 24. Pink salmon run-timing, Niukluk River counting tower, Norton Sound, 1995-1996.

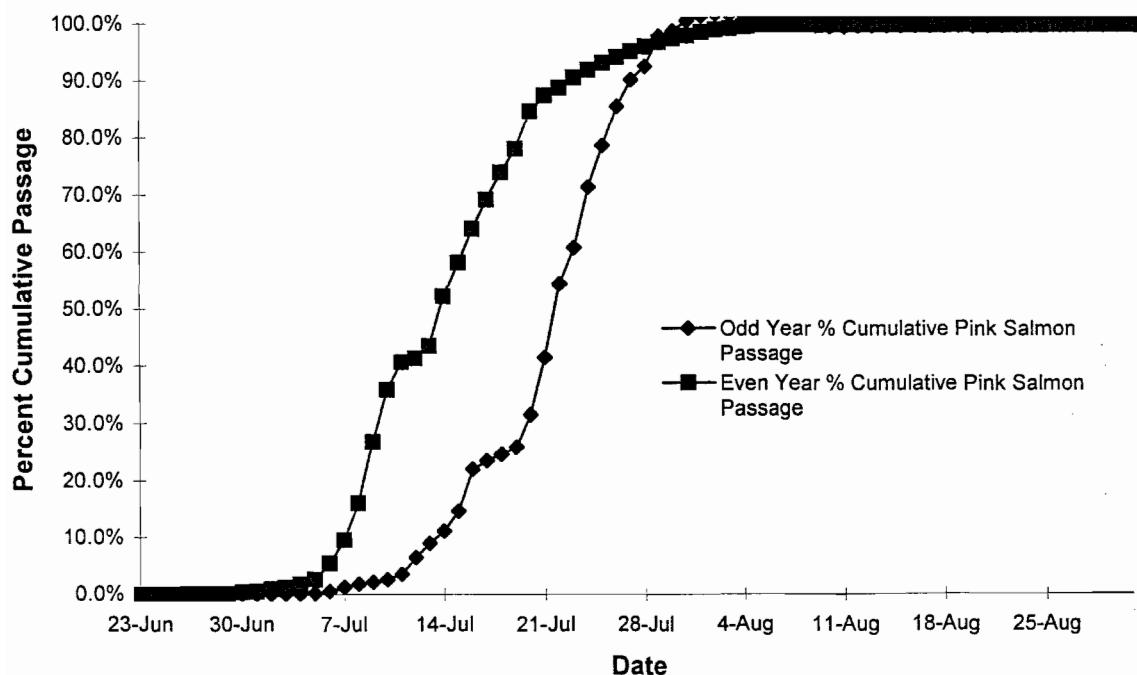


Figure 25. King salmon run-timing, Niukluk River counting tower, Norton Sound, 1995-1996.

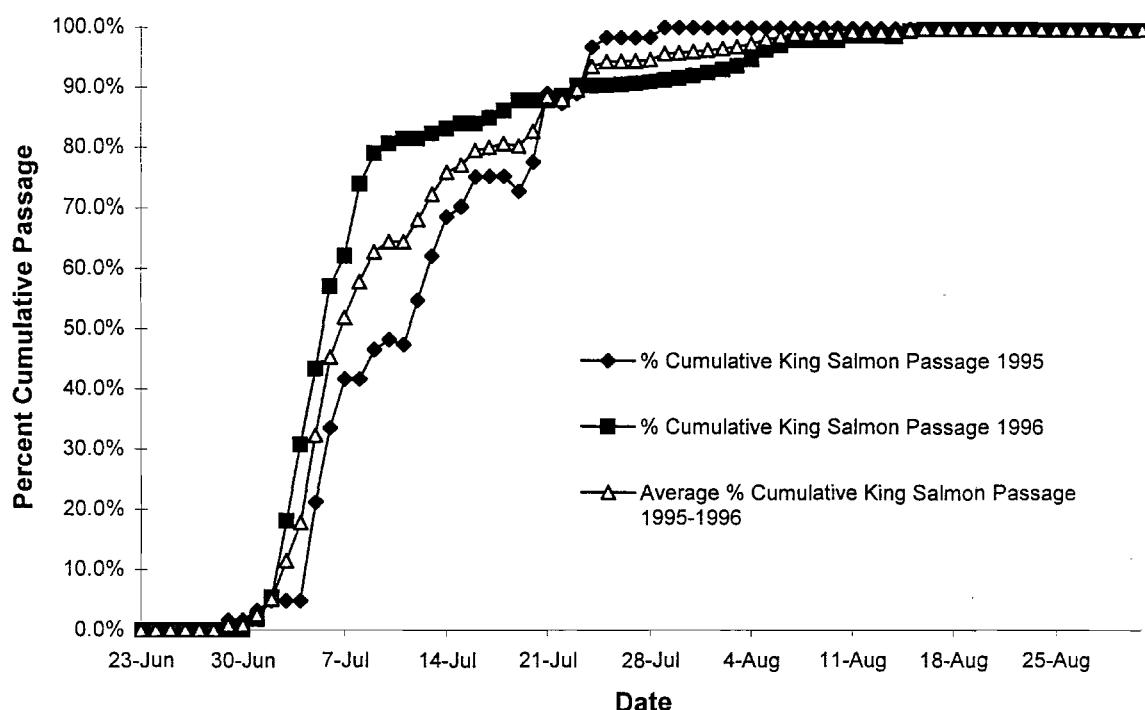
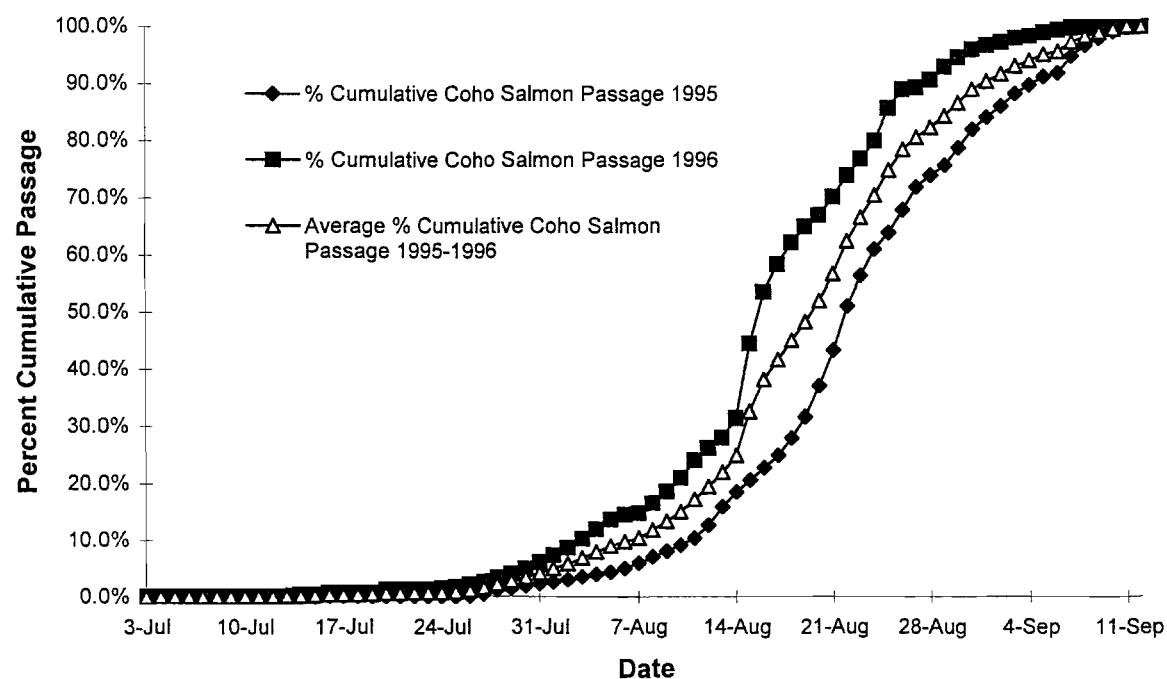


Figure 26. Coho salmon run-timing, Niukluk River counting tower, Norton Sound, 1995-1996.



**Figure 27. Dolly Varden run-timing, Niukluk River counting tower,
Norton Sound, 1996.**

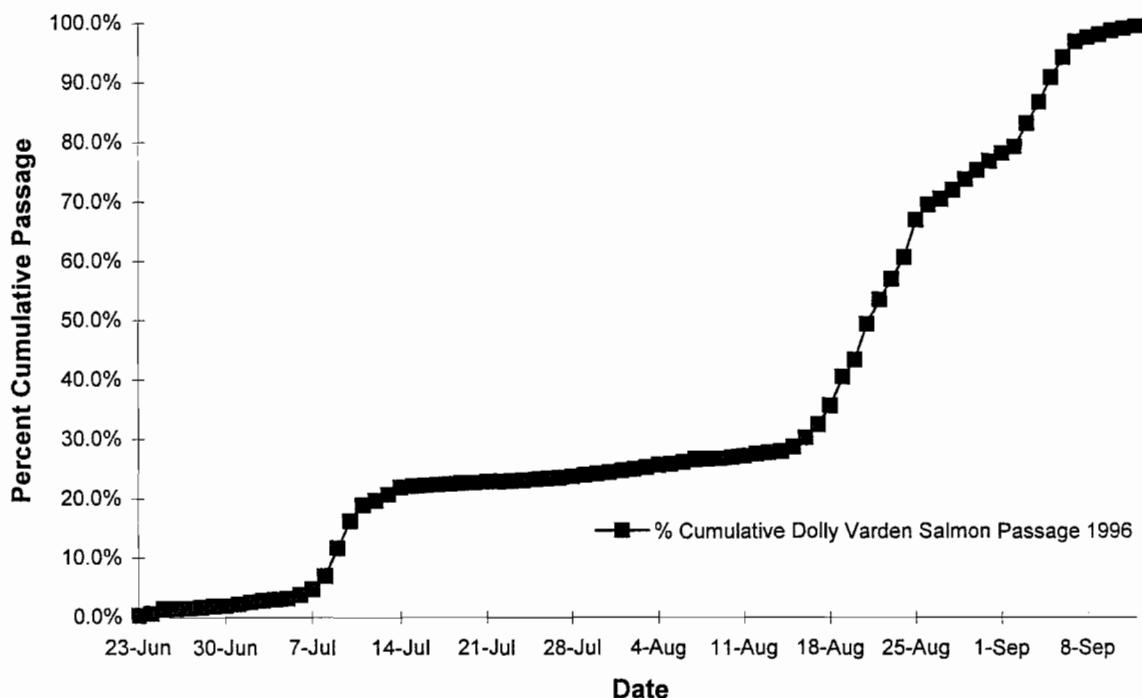


Figure 28. Cumulative chum salmon passage past the Niukluk River counting tower, Norton Sound, 1995-1996.

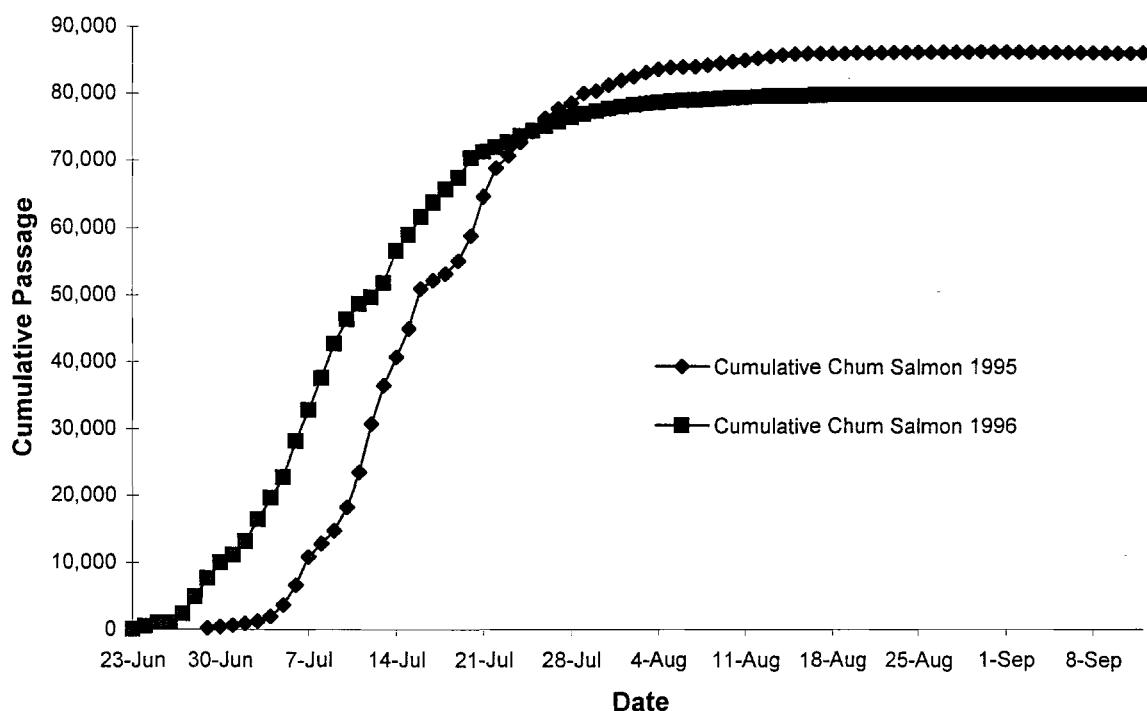


Figure 29. Cumulative pink salmon passage past the Niukluk River counting tower, Norton Sound, 1995-1996.

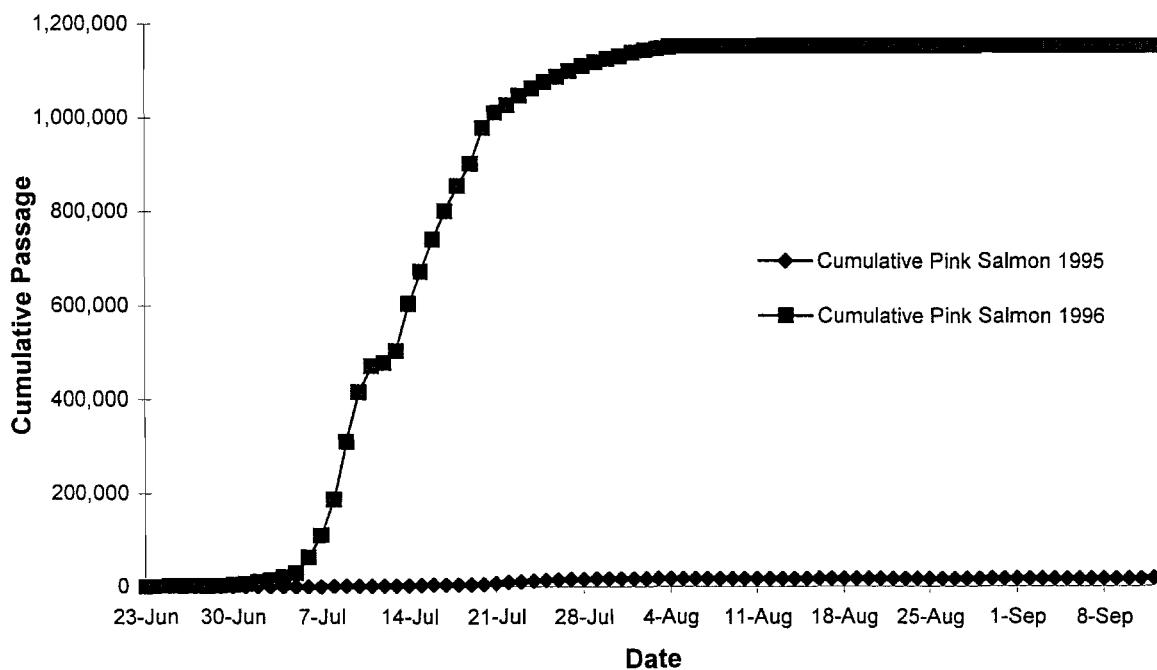


Figure 30. Cumulative king salmon passage past Niukluk River counting tower, Norton Sound, 1995-1996.

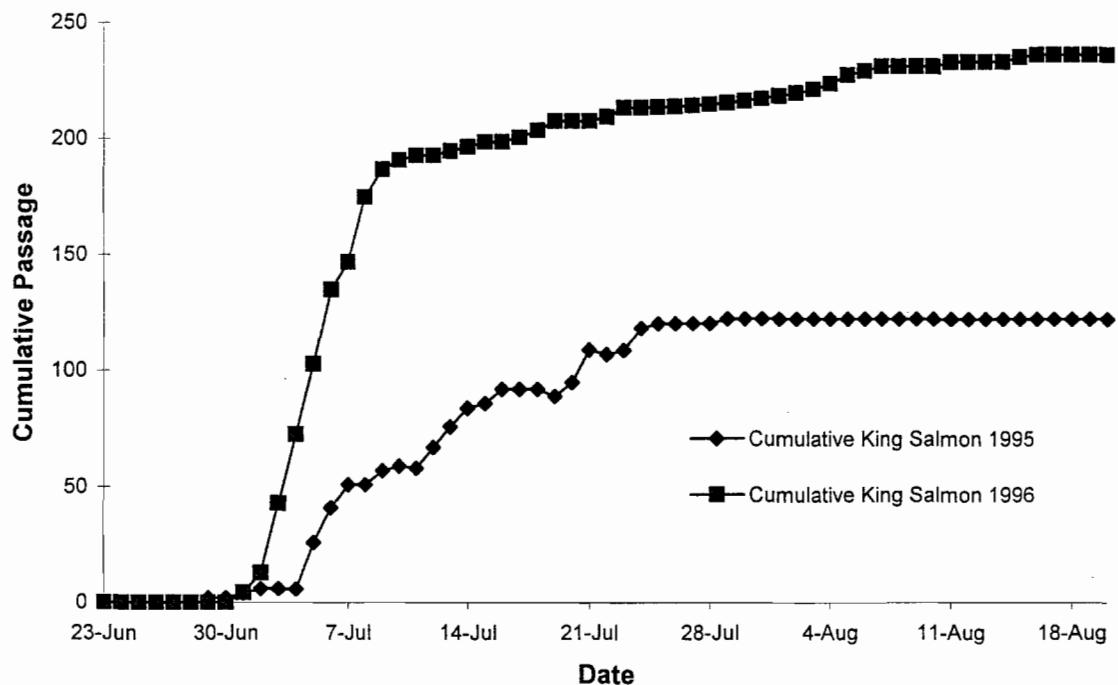


Figure 31. Cumulative coho salmon passage past the Niukluk River counting tower, Norton Sound, 1995-1996.

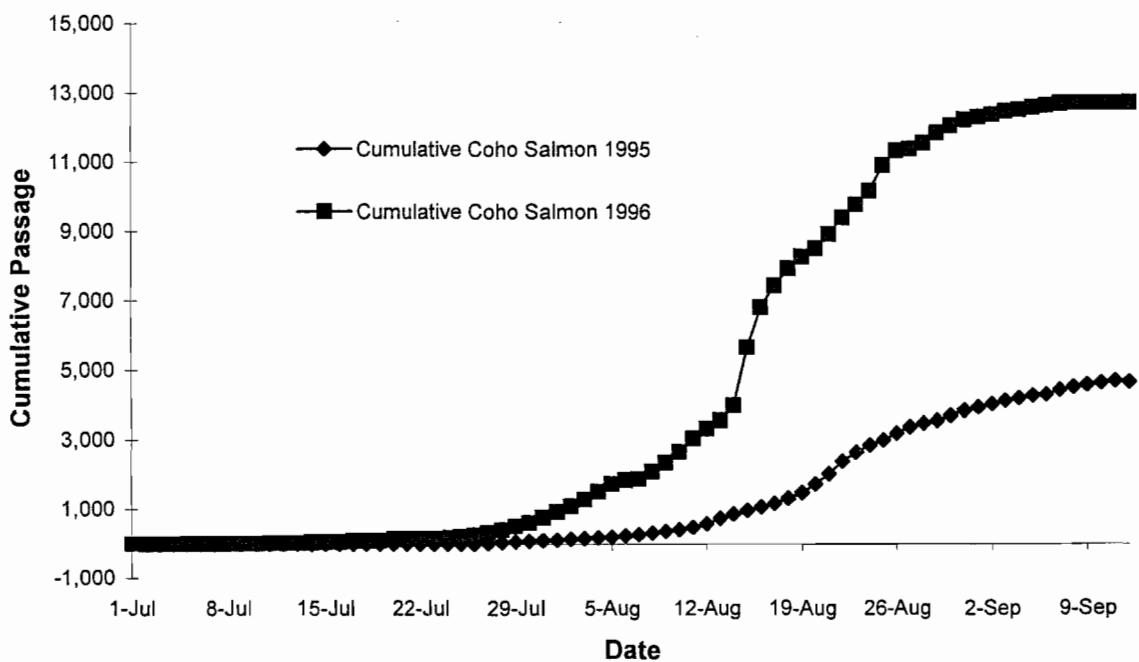


Figure 32. Cumulative Dolly Varden passage past the Niukluk River counting tower, Norton Sound, 1995-1996.

